Vol. 2 No. 1

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

JANUARY, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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ACCIDENTS REPORTED DURING 1914.

INTRODUCTION.—During the year 1914, 38,126 reports of industrial accidents were received. These reports have been tabulated and in the accompanying table are classified according to the industries in which they have occurred and the nature of the injuries received. In the next few bulletins to be issued by the Department, various other details concerning these accidents will be taken up and put into tabular form. Part 2 of the Report of the Commissioner of Labor and Industry for 1914 will carry the full details of all these accidents. It is hoped that the presentation of these facts will show the industrial establishments the necessity for earnest work in the accident prevention field, and will suggest some lines along which it would be best to work. A careful study of these tables as they are issued from time to time will show certain classes of injuries which can readily be avoided. Others, it will be seen, can be reduced in number by educational work carried out along this line. It is generally admitted that approximately 50 per cent. of all accidents can be avoided if every person concerned will do his utmost to prevent them. No doubt, many people have not realized the enormous waste of time and money, and the accompanying suffering, which is occurring every month in this State because of accidents. A statement of these facts in concrete form is, therefore, important, and the figures given below will no doubt show the necessity for active work throughout the Commonwealth in the accident prevention field.

LOSS IN WAGES.—During the past year, $1,048,503.96 in wages was lost to the employees of this State as a result of those industrial accidents reported. This does not represent the total loss of money due to accidents, as it does not include the loss to the employers. Whenever an accident occurs, considerable time is lost by all the members of that shop or department, due to the excitement of the accident itself. Also, it is necessary to replace the injured man, who may be skilled in his particular line, by some one who is less experienced. In this way the organization of the establishment is disrupted and production is lessened and costs are increased. Many manufacturers claim that the monetary loss to the industry is almost as great as that to the injured man himself. Accordingly, it can be justly assumed that the $1,048,503.96 given above represents only a part of the total monetary loss occasioned by the industrial accidents reported.

LOSS OF TIME.—The reports received indicate that a total of 426,824 days were lost. Each person injured was unable to work for an average period of approximately 12 days. It must be borne in mind, however, that this does not represent the total number of days lost through industrial accidents, as the Department does not receive reports of accidents which occasion the loss of two days or less.

NUMBER OF PERSONS AFFECTED.—A study of the table will reveal the fact that 64,076 persons were actually dependent upon the wage-earners injured, so that in reality the income was temporarily taken away from 100,000 persons during the past year. In other words, one person out of every 77 living in this Commonwealth has been directly affected by these reported accidents.

CONCLUSION.—The above figures show the economic importance of industrial accidents, and it is hoped that their presentation will tend to awaken the interest of the public to the necessity of accident prevention work. It is believed that by a consistent effort on the part of every one concerned, his appalling number of accidents and monetary loss can be reduced by thousands.

SUMMARY TABLE OF ALL ACCIDENTS REPORTED FOR THE YEAR 1914 BY DIVISION OF INDUSTRY.

Industries.	Injuries.									Males.			Females.		
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Loss of parts.	Hernia.	Blood poisoning.	Puncture.	Unclassified.	Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.
Nursery products—Plants and flowers,	.....	2	4	1	.....	.....	.....	.....	.....	1	1	4	.....	.....	1
Engineering and laboratory service,	1	9	12	8	.....	1	.....	.....	1	6	5	18	.....	1	2
Building trades,	35	284	232	149	4	.....	5	15	25	32	91	624	.....	.....	2
Chemical and allied products,	56	185	149	105	1	1	3	7	21	31	61	435	.....	.....	1
Clay, glass and stone products,	48	311	480	131	10	2	5	10	49	38	109	888	.....	.....	11
Clothing manufacture,	2	19	16	14	.....	.....	.....	2	2	1	10	33	.....	1	10
Food and kindred products,	19	89	104	44	2	.....	1	5	11	1	44	204	.....	1	25
Leather and rubber goods,	14	74	76	27	3	.....	1	4	2	5	27	168	.....	.....	1
Liquors and beverages,	1	12	14	12	.....	.....	.....	1	1	1	9	31	.....	.....	.....
Lumber and its remanufacture.	2	68	147	27	6	1	.....	8	2	8	57	194	.....	1	1
Paper and paper products,	20	136	83	45	4	.....	1	4	7	4	38	240	.....	6	12
Printing trades,	2	51	41	11	4	.....	.....	1	1	.....	25	74	.....	2	10
Textiles,	18	119	162	60	5	.....	5	8	9	10	56	254	1	10	55
Miscellaneous products,	33	110	87	55	4	1	2	7	10	11	47	245	1	1	4
Laundries,	4	5	2	2	1	.....	.....	2	1	1	3	5	.....	2	6
Metals and metal products,	1,973	6,660	5,965	2,774	161	53	75	296	975	158	1,737	17,018	.....	3	16
Mines and quarries,	33	221	311	93	5	.....	.....	9	9	26	57	598	.....	.....	.....
Public service,	755	6,489	3,386	2,567	12	14	16	237	691	42	706	13,387	.....	3	29
Tobacco and its products,	1	11	3	2	1	.....	.....	.....	.....	.....	4	12	.....	1	1
Unclassified industries,	1	5	1	3	.....	.....	.....	.....	.....	1	3	5	.....	.....	1
Total to date,	3,018	14,860	11,275	6,130	223	73	114	616	1,817	377	3,090	34,437	2	32	188

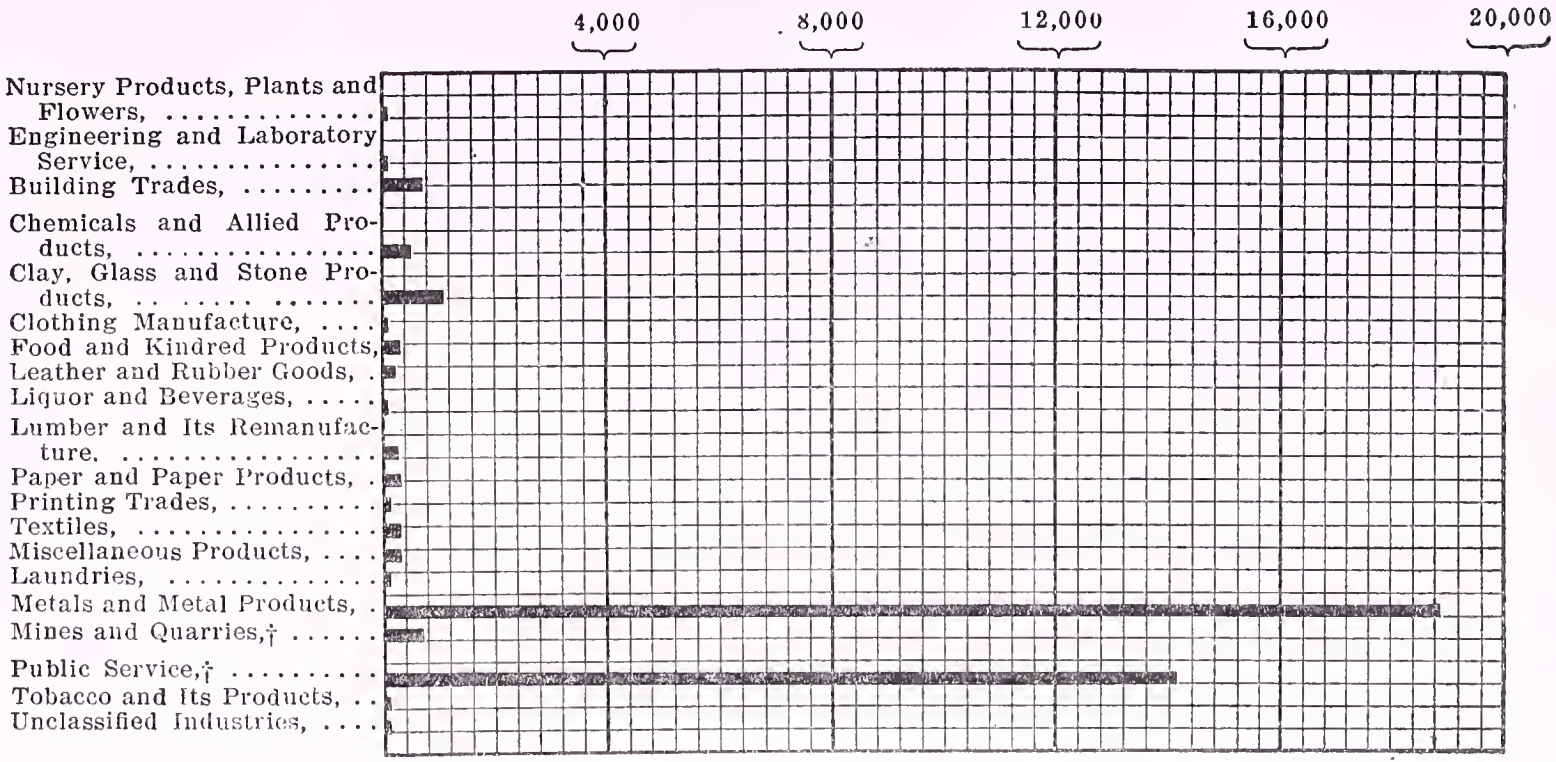
The above does not include accidents reported to the Department of Mines or Public Service Commission.

SUMMARY TABLE OF ALL ACCIDENTS—Continued.

Industries.	Total to date.	Loss.		Number of dependents.	Cause.				Speak English.		Languages not given.	Minors Under 16.	
		Number of days lost.	Wages lost.		Defective equipment.	Lack of safeguards.	Careless methods.	Cause not given.	Yes.	No.		Males.	Females.
Nursery products—Plants and flowers,	7	28	$147 40	19	.....	.....	2	5	5	2	.....	.....	.....
Engineering and laboratory service,	32	221	487 45	41	.....	.....	2	30	24	8	.....	2	1
Building trades,	749	5,552	13,918 10	1,145	2	1	47	699	659	63	27	.....	.....
Chemical and allied products,	528	4,783	9,564 44	792	.....	3	69	456	456	57	15	1	.....
Clay, glass and stone products,	1,046	12,183	24,368 30	1,518	1	2	123	920	859	174	13	7	1
Clothing manufacture,	55	565	996 59	34	.....	.....	3	52	54	.....	1	2	.....
Food and kindred products,	275	2,875	5,693 30	249	2	1	29	243	251	15	9	6	.....
Leather and rubber goods,	201	1,977	4,044 10	194	.....	.....	44	157	176	16	9	7	.....
Liquors and beverages,	41	580	1,553 25	65	.....	.....	6	35	40	.....	1	.....	.....
Lumber and its remanufacture,	261	2,686	5,440 45	246	.....	.....	43	218	253	2	6	3	.....
Paper and paper products,	300	2,628	4,683 00	222	2	1	44	253	279	8	13	5	1
Printing trades,	111	1,559	3,002 20	66	.....	.....	25	86	109	.....	2	8	.....
Textiles,	386	4,184	7,230 00	245	.....	2	63	321	353	24	9	40	11
Miscellaneous products,	309	3,294	7,172 85	388	.....	3	52	254	272	24	13	4	1
Laundries,	17	237	595 40	8	.....	.....	1	14	14	1	2	1	.....
Metals and metal products,	18,932	225,372	547,025 62	30,796	47	47	2,989	15,849	13,988	4,348	596	73	.....
Mines and quarries,	681	6,302	13,104 15	1,244	2	.....	23	656	425	177	79	.....	.....
Public service,	14,167	151,318	398,299 30	26,772	10	6	1,297	12,851	13,062	884	221	3	2
Tobacco and its products,	18	356	883 66	16	.....	.....	4	14	16	2	.....	1	1
Unclassified industries,	10	124	294 16	16	.....	.....	.....	10	10	.....	.....	.....	.....
Total to date,	38,126	426,824	$1,048,503 96	64,076	66	66	4,866	33,123	31,305	5,805	1,016	163	18

The above does not include accidents reported to the Department of Mines or Public Service Commission.

CHART SHOWING COMPARISON OF ALL REPORTED INDUSTRIAL ACCIDENTS, 1914.



†Does not include accidents collected by Public Service Commission or Department of Mines

A REPORT OF THE HEALTH OF THE OPERATIVES IN THE TOBACCO INDUSTRY AND THE SANITARY CONDITIONS UNDER WHICH THEY WORK.

Pennsylvania Department of Labor and Industry,
Division of Industrial Hygiene,
Harrisburg, Pa., February 5, 1915,

Hon. John Price Jackson, Commissioner of Labor and Industry,
Harrisburg, Pa.

Dear Sir: In compliance with your request, I directed Walter H. Blakeslee and Elizabeth B. Bricker, Medical Inspectors, to make an investigation into the conditions under which employees in the tobacco industries of Pennsylvania are now working, and, so far as possible, to investigate the health of the people employed.

Attached please find their report upon this investigation.

Very respectfully yours,
(Signed) JOHN C. PRICE,
Chief Medical Inspector.

Harrisburg, Pa., February 5, 1915.

Dr. John C. Price, Chief Medical Inspector,
Department of Labor and Industry,
Harrisburg, Pa.

Dear Sir: We wish to make the following report upon the investigation of the tobacco industry in Pennsylvania, made by us at your direction.

Very truly yours,
(Signed) WALTER H. BLAKESLEE,
ELIZABETH B. BRICKER,
Medical Inspectors.

REPORT OF INSPECTION OF THE CIGAR AND STOGIE FACTORIES IN PENNSYLVANIA.

INTRODUCTION.—In making an inspection of the cigar and stogie factories of Pennsylvania, 111 factories were visited. In these factories, the general working conditions were examined, with particular reference to sanitation and hygiene. Observations were also made of the physical appearance of the operatives.

The various processes in the manufacture of cigars and stogies are as follows: Casing, or moistening, of the tobacco, which is usually done by men; stripping, or removing the large midrib of the leaf, which is done by women; and bunching, rolling, banding and packing, which are done by both men and women.

EMPLOYEES.—Production reports received by the Department show that 535 establishments are engaged in the manufacture of cigars and stogies, employing 33,114 persons, of whom 13,049, or 39.4 per cent. were males, and 20,065, or 60.6 per cent. were females. Of these employees, there were under the age of 16 years, 192 males, or .6 per cent. of the total employees, and 877 females, or 2.6 per cent. of the total employees. These figures demonstrate that in the tobacco industry of Pennsylvania only 3.2 per cent. of the total number of employees are under the age of 16 years.

For the purposes of this inspection, 111 factories were visited. These establishments employed 11,141 persons, of whom 3,071, or 27.5 per cent. were male, and 8,070, or 72.5 per cent. were females. The number of employees under 16 years of age was 49 males, or .4 per cent. of the total number of employees, and 396 females, or 3.5 per cent. of the total number of employees.

The physical appearance of the employees indicated, in many cases, a poorly nourished condition, shown by a pale, waxy complexion. Stooped shoulders and shuffling gait were frequently noted. Some, particularly among the strippers, complained of "feeling sick in the stomach" when they first began to work in the factory. This feeling soon passed away. Sore throat was occasionally reported, and dirty and decayed teeth were frequently noted. No history of menstrual disorders or of abortions was obtained which would indicate that these conditions are more frequent than in any other occupations where women are employed. Part of this tendency towards ill health is undoubtedly caused by the biting out of the ends of the cigars with the teeth and licking the wrappers with the tongue. This practice is gradually disappearing, as a result of its prohibition by the Department of Labor and Industry.

THE WORKROOM.—In examining into the conditions of the workrooms, attention was given chiefly to the following items: Ventilation, lighting, toilets and other conveniences, and general cleanliness.

It was found that the ventilation in many of the workrooms was inadequate. This was due to the fact that no proper means for the circulation of air was supplied, and the only method of getting fresh air into the room was by the opening of the windows. The workers, in many cases, objected to the drafts and to the accompanying drying of the tobacco caused by open windows, and consequently such workrooms were very poorly ventilated.

The measurement of the workrooms disclosed the fact that none was overcrowded beyond the legal requirement of 250 cubic feet of air space for each person.

In practically all of the factories sufficient light was provided for, although in many cases the amount of natural light reaching the work-table was greatly reduced on account of the extremely dirty condition of the windows. In many cases the arrangement of the artificial lights was such that a continuous glare was thrown into the eyes of the workers.

Generally speaking, the toilets were in a fair condition of cleanliness and repair, were properly ventilated to the outside air, and adequately screened. In many factories, however, both large and small, and in those located in dwelling-houses, the sanitary conditions could be much improved. In one factory no toilet was available, and the shop was ordered closed immediately.

Adequate washing facilities and separate dressing and lunch-rooms were found only in the larger factories. In many establishments, however, where these conveniences existed, they were dirty and untidy. Lunches were kept on the window-sills and the work-tables, and eaten in the work-room. The reason given in many cases for the workers not keeping their wraps in the dressing-rooms was the fear of receiving vermin from clothing on adjoining hooks.

With but few exceptions, the floors, halls and stairways were dirty from accumulated dust and waste. Each movement of the workers stirs up this dust and allows it to be carried to the lungs of the operatives. This results in a general lowered vitality of the whole system, producing an increased susceptibility to tuberculosis. The United States Census Report corroborates this statement as it ranks as an occupation in which the death rate from tuberculosis is very high. This menace from dust can be largely overcome by providing means for keeping the cuttings from falling on the floor, by proper sweeping and frequent scrubbing of the floors.

Such conditions are a menace to the physical welfare of any employee. The younger the persons, the more susceptible they are to this influence. In one factory, three girls, just past 14 years of age, were

making cigars. They were thin, pale and had an attitude indicative of fatigue. The chest was contracted, the shoulders drooped forward, and the back was bent. These conditions, in a greater or less degree, were found among the children throughout the entire industry.

RECOMMENDATIONS.—On this inspection are based the following recommendations:

No minor under 16 years of age should be employed in factories engaged in the manufacture of tobacco products.

Sufficient air, of suitable temperature and humidity, should be provided. If necessary, mechanical means for accomplishing this, should be installed.

Adequate wash, dressing and lunch rooms, properly separated from the work rooms, should be provided. Employees should not be allowed to remain in the work rooms during lunch hour, and the rooms should be thoroughly aired during this time.

Windows should be kept clean, and artificial lights should be properly arranged and so shaded as to protect the eyes of the workers.

CONDITIONS OF WOMEN

IN

MERCANTILE ESTABLISHMENTS

IN

PHILADELPHIA

CONDITIONS OF WOMEN IN MERCANTILE ESTABLISHMENTS IN PHILADELPHIA.

CONTENTS.

INTRODUCTION.

The present investigation of retail selling was undertaken by the Consumers' League of Eastern Pennsylvania in consultation with, and with aid in certain directions from the State Department of Labor and Industry. The period covered extended over seven months from November 15, 1913, to June 15, 1914. This study was undertaken in answer to repeated public demands as to the present conditions in Philadelphia department stores. In other cities—especially New York, Boston and Baltimore—reports have already been published on this important branch of woman's work, and since the time of the sensational inquiry of the courts in Chicago, it has been felt that to Philadelphia was due some answer to repeated inquiries concerning her own local conditions. According to the 1910 Federal Census there are in Philadelphia stores 11,605 saleswomen and clerical workers. Excepting domestic service, department store work ranks fourth in number as an occupation for Philadelphia women, being exceeded only by textile manufacture, machine operating and dressmaking. This study aims to inquire into conditions affecting the women not only of the six large department stores in the centre of the city but of the majority of the retail stores in all parts of the city employing more than ten women.

Only those establishments were included in the report where complete inspection of the physical conditions was permitted. The points emphasized were wage payments, number of employees, hours and conditions of work, seasonal employment, and educational or welfare work. The investigation included 17 department stores, 18 women's specialty stores employing not less than 10 saleswomen each, and 20 five and ten cent stores. In these 55 stores, 9,981 women were employed, excluding those in workroom service and private office work. The Federal Census for 1910 list 11,605 women for the entire city.

Because of the frequent reports of poor ventilation in basements of department stores, the Consumers' League enlisted for this part of the investigation the services of a ventilation engineer, whose findings are contained in this study.

Through the courtesy of the management of five department stores, pay roll material was obtained for all women employees with the exception of those classes already mentioned. Four of these stores also submitted data on contingent and extra help and on the ages and length of employment of workers. A sixth store, employing less than 500 women, refused data similar to that supplied by the other stores. It was impossible to delay the publication of the report for further negotiations between the Department of Labor and Industry and this store.

In connection with the wage statements, it was thought wise to include some material on the cost of living of store women. Chapter IV, containing this part of the study, is intended to serve as a background against which the purchasing power of the wages received by these women appear in their actual proportions. To collect the data in Chapter IV, a budget inquiry was begun with the purpose of obtaining information on personal expenditures in order to learn how far the wages of department store women enable them to be self-dependent. By this method, budgets from 788 girls were obtained. With the co-operation of four of the stores from whom pay roll material was secured, budget cards were filled out by 363 saleswomen during lunch or class hours in the store. By far the most valuable information of a personal nature was gained through friendly visits to 425 girls. Frequent interviews—in one case as many as 18—were had with most of the girls. Besides the schedule budgets, 22 complete expense account books kept by store girls from March, 1913, to March, 1914, were used for the cost of living study.

The wage statements in Chapter IV are in no way to be regarded as quotations for the entire study. They were gathered only as a necessary complement to an inquiry into the cost of living. It will be noticed however, that these wage figures correspond in a general way to the scientifically procured data in Chapter III.

No data for the report is of earlier date than March, 1913, or later than June, 1914. The material was gathered and prepared by Marie Biddle, May K. Flannery and Mary McConnell.

I. ORGANIZATION.

Department Stores.

The central shopping district in Philadelphia is confined to a comparatively small area, the stores being all located within a few blocks of each other on Chestnut and Market streets. The gradual growth of the department store has brought about a corresponding increase in its functions and activities which in turn has necessitated a clearer definition of the duties and responsibilities of the many individuals that comprise its working force. In all stores the general classification of workers is similar. Every branch of activity has its own manager under the general manager.

Management.

The superintendent, however, represents the firm to the buying public and to the employees. He controls the clerical, selling and service

forces, and he and his assistants engage and dismiss employees, follow their daily records and watch them for promotion. Next in rank are the floor managers, under whom come the aislemen or floormen. They supervise the business of their section of the store, aid customers, sign sales-checks, exchanges, etc. In addition a floorman sometimes acts as buyer, teacher of salemanship, head of junior help or in other capacity.

Buyer.

The position of buyer is held by a man or a woman according to the nature of the merchandise sold in the department. Although there is only one buyer to many salespeople the position is open to women of marked ability who have trained many years with the store. The buyer may purchase for and be the head of one or several departments and with her it rests to show the largest possible amount of profit. It is her responsibility to see that the expense of the selling force and of stock does not exceed a set percentage of the total sales. To conduct a department with the greatest economy, therefore, the buyer will increase or diminish the number of salespersons as seasons and sales warrant. The buyer has direct supervision of the selling force and it is apparent that by granting or withdrawing privileges, she can greatly add to the well-being or discomfort of those in her department.

Assistant Buyer.

The assistant buyer is at the head of stock. She gives to the buyer information of how goods are selling and, because of her intimate knowledge of the taste of customers, she can make valuable suggestions regarding the choice of new merchandise. In the buyer's absence she arranges and directs special sales.

Saleswomen.

The position of saleswoman is the one that leads to these higher appointments, and while every girl feels that she can sell, it is not by any means every one behind the counter who makes the most of this position. Stores seek increasingly girls who wish to remain permanently at selling. With the present-day opportunities in some houses for training, salesmanship is becoming a profession with direct financial returns both to employer and employee for the effort expended. The saleswoman is the medium through which the business of the store is carried on and her daily sales-sheet is the key to the efficiency with which she fills her place. She must be always on the alert for prospective customers and if she does not succeed in making a sale, it is nevertheless her responsibility to see that the customer does not leave the counter dissatisfied and other sales thus be lost to the house. On the other hand, the saleswoman must not urge upon a customer an

article that will be returned. This is not only an expense to the house, but it reacts unfavorably upon the girl. The successful saleswoman learns to distinguish a so-called "looker" from an intending buyer and recognizes when the former can be converted into the latter. It will be seen therefore that a knowledge of human nature is second only to a thorough knowledge of stock. After the sale is made, the saleswoman makes out a slip in her book according to the nature of the transaction. The following varieties of sale are found in all stores: Pay and take, pay and send, C. O. D., charge and take, charge and send, goods bought on credit slip, goods bought on a transfer, goods bought on a purchasing order. Some stores use a separate book for charge and for paid sales. In all cases the sales-book must be carefully handled as the pages are numbered and all must be accounted for at the close of the day.

Junior Salesgirls.

Two stores have junior saleswomen under 21 years of age who are practically serving an apprenticeship, for while they make sales under the head of their department they are also under the supervision of the head of the education department.

Stock Workers.

The stock girl is often under 18 years of age and may be training for selling or for a position in the stockroom. Some girls are better fitted physically and temperamentally for a position where they do not meet the public and often an effort is made to fit them permanently in the stock room at marking and receiving goods, invoicing, or in other clerical positions. After men have unpacked the new merchandise, it is examined and marked with the price and style by girls in the stock room preparatory to its being put on sale. In one store all the new salespeople spend a part of every day in the stock room and thus each girl is afforded an excellent opportunity to learn under the direction of the buyer the variety and value of the merchandise she will handle. Goods are brought to the department usually by boys or men. There the stock girl's duty is to keep the merchandise dusted and in order and to put articles back into boxes and on the shelves as the saleswoman finishes showing them, thus enabling the saleswoman to serve the next customer without delay. It is estimated that this saving of time doubles the capacity of the salesperson. It is also the practice to have stock girls and some saleswomen come earlier in the morning to get the department in order, thus allowing the most expert saleswomen to concentrate their efforts on selling. In small department stores, the saleswomen take care of and bring their own stock to the department as needed.

Cashiers.

In some of the department stores at counters and aisle-squares where small articles that do not need special wrapping are sold, also in the smaller neighborhood and five and ten cent stores, saleswomen do their own wrapping. They use a cash register, thus making their own change in much less time than it would require to take the article to an inspector's desk and wait for the money to come back from a change centre in a remote part of the building. Enclosed squares in aisles almost always have their own cashier—a system which has the advantage of doing away with messengers running through passages that should be left free for customers. Two stores have an excellent plan whereby each department has a girl at a cash register, who acts also as an inspector. Five department stores have this system only in departments where small goods are sold. The cashier inserts part of the sales-check in the register. If she makes a mistake, the floorman will fill a blank called an "error slip" which can be pinned to the particular voucher. In the stores where the work of cashier is becoming more responsible, the tendency is to have older girls fill this position. Cashiers are usually bonded.

Tube Cashiers.

When cashiers are not seen on the floor, they perform their duties in a central tube room which is usually in the basement or sub-basement. There, seated in front of pneumatic tubes coming from all over the store, they receive cash and make change which they return by the carriers to the inspector in the department.

Inspectors and Wrappers.

As said above, two stores have cashiers at all wrapping desks. The inspector both wraps the parcels and handles the money. In the case of "pay and take" sales, the salewoman places the article sold with the sales slip on the inspectors' desk. Part of the slip is detached and put with the money in an empty carrier and sent to the cashiers in the central tube room. While waiting for change the inspector examines or measures the article sold and compares it with the sales slip before wrapping it. When the carrier containing the change is returned, she compares it with the slip and the proper bundle and delivers it to the saleswoman. The work of the inspector is made more difficult by the large number of saleswomen she serves at one time. Her presence is indispensable to the saleswoman. She usually works alone at a desk and until relief is supplied, she may not leave her place. Although this work requires a girl to be bright and alert for mistakes of the saleswoman and of the cashier, it is usually performed by girls from 15 to 19 years of age.

The day of the inspector usually begins fifteen minutes earlier than that of the saleswoman and often she remains later than the others

to prepare packages for the morning delivery or, in one store, to help in the coat room. The stores that have a cashier at the wrapping desk have best handled this difficult matter, as one girl can do the other's work when necessary if relief is not supplied and the young inspector has not the same opportunity to make mistakes or to be dishonest; also, the customer gets her change more quickly.

Packers.

In other cities girls are found packing for delivery; but only a very small number of girls were so employed in Philadelphia. Here this work is done by men and boys.

Messengers.

The present construction of some stores makes it impossible to have a cashier within reach of every salesperson. In such cases, small boys or girls carry the money and purchases to and from the wrapper. These children are called cash, errand or messenger girls. Their work requires no skill and a large proportion of little girls who leave school at 14 years begin their working life in these positions. Due to the introduction of pneumatic tubes, cash register and a complete telephone service, some stores have done away with this work. In two stores, an effort is made to complete the neglected education of these children; in others, no more responsibility is assumed for them than for older help.

Clerical Workers.

The clerical force is no less a vital part of store organization and represents practically a quarter of the women employees. It includes stenographers, mail order clerks, auditors and bookkeepers. Some of the mail order clerks are shopping agents and go about the store filling written orders from customers, others attend to the mail-order correspondence. The auditing department follows closely the work of the saleswomen and daily verified their checks. Every night, the saleswoman puts a stub from each of her sales checks into an envelope on the outside of which she has totalled her sales for the day. These envelopes go to the auditing room where the amounts and additions are verified and the checks sorted and filed numerically. All sales-stubs taken in by the cashiers are also sent to the auditing room and there matched up with the sales-check of which they are a part. Numerous bookkeepers are employed entering the amounts of sales in ledgers and charging sales to customers. Other bookkeepers take charge of the "C. O. D." sales. Still others are in the adjustment bureau tracing and correcting errors in sales or charges. There are also other clerks at exchange desks in various parts of the store. A large part of the clerical work, although it requires careful attention, is mechanical and, unless a girl has had special training in bookkeeping or stenography, it offers no future in position or salary. Since

this branch of work must be kept constantly up to date, pressure is frequently put upon the clerical force.

An interesting table of the proportion of workers in the various occupations in five department stores is the following:

TABLE NO. I.

Percentage of Workers in Various Occupations in 5 Department Stores.

	Messengers.	Inspectors, wrappers and floor cashiers.	Tube cashiers.	Stock.	Saleswomen.	Clerical workers.	Total.
Store A,	1.3	18.3	.....	3.7	58.2	18.5	100.
Store B,	4.6	15.1	.....	4.7	53.2	22.4	100.
Store C,	2.2	10.7	3.0	3.3	49.6	31.2	100.
Store D,	7.3	9.3	2.0	7.5	48.7	25.2	100.
Store E,	2.8	5.1	6.7	7.1	49.8	28.5	100.
Total all stores, %,	3.8	12.4	1.8	5.2	52.1	24.7	100.
Total all stores,	288	929	137	389	3,925	1,857	7,525

The ages of store women is of interest. Table XI (page 66) shows 66.1 per cent. of the workers in four stores to be over 21 years of age. The 1910 Federal census figures for Philadelphia show 65 per cent. of store women to be over 21 years, and, by a closer classification, 57.3 per cent. to be between the ages of 21 and 44 years.

Contingent and Extra Force.

The volume of business in department stores varies by seasons, months, days and hours of the day; and, to meet this, the numbers of the selling force must be correspondingly altered. With the exception of millinery and coat and suit saleswomen, there is a fairly regular force in all stores which is augmented from September to Christmas and during March and April. Beyond this all extremes of business are met by summoning some of the vast army of casual department store workers with which the city is supplied. Except before Christmas, when all stores increase their force, this supply of extra workers far exceeds the demand. There is also a group of full or part-time workers who are employed the year round and who are known as "contingent workers." In four stores from which information was secured, there were found registered 392 of these contingents who work, 2, 3 or 6 days each week. In addition to this, there are a great number who work in stores only when sent for or when the store advertises. The number of part-time workers and their distribution through the

week show Monday and Saturday to be the busiest days. The following list of the number of contingents and extra help employed daily was taken from the records of one large store for November, 1913.

TABLE NO. II.

Number of "Extras" Employed Daily in One Department Store in November, 1913.

	Monday.	Tuesday.	Wednesday	Thursday.	Friday.	Saturday.
1st week,	.....	.....	.....	.....	.....	190
2d week,	191	68	96	127	66	189
3d week,	199	89	105	125	78	198
4th week,	193	93	117	139	88	184
5th week,	192	99	146	Holiday.	140	217

The stores arrange for special days or for the busy hours of the day in many ways. Each store has a force of from 25 to 50 so-called regular full-time contingents who work the same hours as regular saleswomen, but unlike them do not belong to a department. They are assigned to places as the supply is needed and sometimes serves in as many as five departments in one day. "Contingents" are usually found at aisle tables where bargains are for sale. The reason for regularly assigning these girls to special "sales" is that bargain hunters get to know and look for the same girl. The life of a contingent is often not a pleasant one; she is put into a department temporarily and the regular girls often object to her presence because she takes no part in the care of stock, is frequently obliged to ask questions, and often deprives the "regulars" of sales. The head of a department requires a girl many times a day to show her sales-book and if she is not maintaining a certain standard, removes her to another department. The "contingent" is often waiting her turn to be permanently assigned to a department—in the meantime she is gaining a knowledge of a wide variety of merchandise.

The part-time contingents work every day from 11 to 5 o'clock or only two or three days a week from 10.30 to 4.30. Relief cashiers are also employed from 11 A. M. to 4 P. M. They go from desk to desk taking the place of the regular cashiers while they are at lunch. One store has stock girls who come in at 8 A. M. and act as relief cashiers from 11 to 4.30, when they go home.

It is apparent that there are many ways of increasing the force in order to have the maximum number in the middle of the day. One store has seven different schedules of hours that apply to their special help alone. To illustrate:

Daily,	25 contingents	10-5 or 11-4
Wednesday and Thursday,	25 contingents	10.45-4.30
Tuesday and Friday,	10 contingents	10.45-4.30
Monday and Saturday,	60 contingents	10.45-5.
Two, three or four days,	others	9.30-5. or 8.00-5.30

Another store in addition to about 50 registered contingents engages some girls every morning between 8 and 10 o'clock according as special sales, the weather or absences in the regular force warrant. At the employment office in this store may be seen every day from 20 to 50 girls and women seeking a day's work for $1. An average of about 25 of these are engaged daily. For some it is a case of first come, first served, but, as there is a chance of being taken on until 10 o'clock, many stay until that hour and only leave when they are told that no more are needed. Many girls are known who apply daily for weeks, thereby wasting time and car fare and secure only an occasional day's work. This is the only class of extra help known who are not notified when they will be needed.

The following schedule by months for 1913 shows to what extent extra help is used by the above house. The figures quoted represent the number of extra day's work monthly—not the number of girls working, as the same girl may appear over and over.

January,	1100	July,	1160
February,	1175	August,	1149
March,	1470	September,	1339
April,	1333	October,	1959
May	1862	November,	2573
June,	1716	December,	2349

It is seen here that January and February and July and August are the dull months for "extras" and November the busy month. The table shows more days extra work for November than for December because after December 24th, all extras are dropped. Next in importance to the Christmas season, which marks the height of retail store business, come the first days of the month when charge accounts soar, and Monday, Friday and Saturday in each week. In addition, most of the Philadelphia department stores hold a much-advertised sale one day each month. All stores keep a record of several hundred extra saleswomen, often former employees, who may be called upon to work from one to ten days a month according to business demands and who respond according to their ability to report when needed.

When there is to be a special sale, it is not infrequent for a superintendent to send out 200 postal cards and have 60 applicants, so uncertain is this class of workers.

The plan of having contingent workers is unquestionably a benefit to the organization of a large house. It secures a fresh group of workers for the middle of the day and keeps the pay roll much lower than were these people to be carried right along. In one store contingents represent 6.2 per cent., and in another 50 per cent. of the number of regular saleswomen. In other stores they range from 10 to 15 per cent. of the regular number. For the worker who has household duties, this form of selling affords an additional occupation. The records of 27 part-time contingents in one store showed only four to be under twenty-one and one-third to be over thirty-five years of age—a fact which might indicate that they had outside responsibilities. A few contingents are students or school teachers desirous of earning extra money, but many are girls striving to get on the regular force. They are adaptable and serviceable as contingents, and, unless they are fortunate enough to secure permanent employment in another store, they usually remain such. Many girls try to make a livelihood by working two or three days a week for two or more different stores. There is no certainity of being engaged however if the weather and business are not good. Uusually girls are told not report in bad weather. One store claims to pay car fare if a girl is sent for and then not needed.

Women's Specialty Stores.

In the centre of the city there are in addition to the six large department stores a number of smaller shops which make a specialty of women's wear. Eleven of the largest of these stores on Chestnut street and Market street were visited. They vary in size from two houses employing less than 25 women to three employing more than 100. The maximum number of women in any one store was 190. Altogether about 878 women were at work in specialty stores. These figures exclude the work room and alteration forces. Only 2 per cent. of the workers in specialty stores were under 16 and only 9 per cent. were under 18 years of age.

Steadiness of Employment.

The limited variety of merchandise carried by these houses make them much less susceptible to the pressure of Christmas trade. On the other hand, women's clothing, always more or less saleable, is particularly in demand in the early spring and autumn. Although these houses have sought by the constant introduction of new styles and variety of stock to equalize the seasons as much as possible, there is nevertheless, just previous to the opening of the two clothing seasons a very dull period during which many of the stores lay off

workers for one or two weeks. Six houses guarantee to their workers only 48 weeks' employment during the year. In four other stores, older employees are allowed vacations of one or two weeks with pay in summer, as is the custom among department stores. All employees in these houses are not however regularly at work throughout the year, but to what extent vacations taken by them were voluntary or otherwise could not be determined. In two stores there seemed to be good opportunity for steady employment.

Difference in Organization from Department Stores.

In the specialty stores, where there is little or no mail order trade and where the business carried on is direct, 80 per cent. of the women included in this study were engaged in selling, as against only 52 per cent. in the department stores. That the organization of the smaller stores is such that bookkeeping may be minimized is shown by the fact that only 8 per cent. of the women held clerical positions, as against 25 per cent. in the department stores. In the specialty stores the comparatively small numbers of workers enables the management and division heads to establish more direct relations with their employees and to avoid the imposition of rigid rules. This lends a spirit of freedom and ease to which the girls readily respond and the majority of them would be loth to exchange the more homelike atmosphere of the smaller shop for the nervous excitement of the department store.

II. GENERAL WORKING CONDITIONS.

Down-town Stores.

Structure of Buildings.

With one exception the structural conditions of the down-town Philadelphia department stores are comparatively the same. This exception is a structure of the highest class and is one of the largest department stores in the world. It is of fire-proof construction, has good light and ventilation, a sprinkler system and all other equipment necessary in a building that may house as many as 10,000 people. The other stores except for new sections are all non-fire-proof and their sole protection from fire consists of the automatic sprinkler systems. These stores have all arrived at their present size by the simple process of annexing adjoining buildings. These buildings are not always uniform in structure and often have different floor levels. They are furthermore of a type no longer permitted to be constructed. Many of them were originally designed for wholesale trade and all

are of great depth. There are consequently no interior courts, which are the best means of providing light and ventilation for large buildings. Such courts or rotundas when open at the top are however now recognized to be a dangerous feature in time of fire and the construction of this type of building is no longer permitted in New York City.

As a result of these unsystematic enlargements, the elevators and stairways in Philadelphia stores are not always placed to the best advantage for ventilation. Open elevator shafts are often the cause of cross currents of air and doorways too are a source of draughts even in the modern stores. Even with the greatest attention to the construction of entrances, it seems impossible to protect girls near doors from colds during the winter months.

Basement Selling.

Basement selling is a characteristic of department stores in Philadelphia, as in many other cities. Here however it is a usual custom, the value of which has been increased for the stores by the construction of subway entrances. In these basements the conditions are particularly unfortunate. Their great depth, lack of natural light and ventilation and unusually low ceilings may be blamed upon their original construction as cellars of an earlier day. In the newer and better New York stores basement selling has already been done away with.

Ventilation of Basements.

Many reports from workers concerning the bad air in basements led to the securing of an opinion by a ventilation expert as to what provision for ventilation the stores had made. One store of recent construction has a complete ventilating system designed as a unit and as a necessary part of the building. As a result, the system leaves nothing to be desired. The capacity, the location of inlets and outlets, the means for cleansing and regulating the temperature of the supply of air are such that on the warmest days the employees feel none of the oppression that is complained of in other stores and in the winter, they are comfortably warm. Careful technical examination of the system in use in four other stores shows that in spite of the means that have been taken to provide artificial ventilation and the obvious expense of installing the same, the air is at times oppressively bad. In one store of this group which installed a very elaborate system, the least satisfactory results have been obtained. Examination of these four plants reveals the fact that in many details the systems could be improved. One store has no provision for heating or filtering the air; in consequence, the registers must be closed on a very cold or dusty day, so that for part of the year the system is not in operation. In two other stores, the inlets and outlets are placed opposite

each other so that the air passes directly from one to the other without making a circuit of the room. Due to the very large space and the large number of customers and employees in the crowded bargain departments of these stores, a dead area is formed in which no ventilation exists, the lack of which makes itself extremely perceptible. It is particularly necessary that ventilating systems have outlet ducts in proper position. The window areas in these basements are so located and so small that they are practically negligible as a factor in the ventilation. In addition to the ventilating systems referred to, these basements have also a large number of electric fans. If the ventilating systems were accomplishing their purpose, fans would not be needed. Fans operating either from the ceiling or from the wall, merely agitate the air and, although affording perhaps temporary relief, they are of little value from a hygienic view point. In the tube rooms inspected, sufficient air is emitted from the pneumatic tubes to cause fair ventilation, and usually the same is removed by means of ducts near the ceiling.

On account of the structural conditions, the ventilation of these buildings undoubtedly presents a difficult problem. It would seem however that where a good system cannot be installed, basements should not be used for their present purpose. The employees and the public have a right to demand equally as hygienic conditions in the basement as in other parts of the store. It is almost impossible to realize the depressing effect of spending the whole of one's working day in vitiated air and artificial light—an effect intensified at times by the incessant noise of the pianola. Knowing such conditions it is easy to credit the remark once made by a basement seller, "The sudden change from artificial to natural air in the evening seems to distract me."

Environment.

The presence of the saleswoman eight hours a day in orderly and cheerful surroundings and the conscious part she plays in the complete and harmonious store system often has a wholesome influence upon her character and habits which may be traced through life. However, the presence of the extravagantly dressed shopper and the craving often created in the salesgirl for the possession of those things she sees others buy so easily, exercise a less salutary influence. Also, in its effect upon the girl, much is to be said against the use of the main floors of department stores as public thoroughfares. A good physical appearance is an asset to the saleswoman, not only in the clothing departments, but also in many departments on the street floor, and here, unless supervision is very strict, there is almost unlimited opportunity for the stranger to make acquaintance among the salespeople. Although these conditions hold unfavorable possibilities for some girls when the close supervision of the store manage-

ment is removed, it has not appeared during the course of this investigation that there is any demoralizing influence within the stores themselves. There has been for years a question in the public mind as to the relation between store wages and the opportunity afforded to supplement these wages in undesirable ways. It seems however clear, that the Philadelphia stores are generally free from the charge so often referred to the Consumers' League of acquiescence by the management in immorality or indiscretion on the part of the women employees. Some of the stores have recognized the normal craving for amusement among young people and have done much through their clubs and social gatherings to promote wholesome entertainment.

Provision for Health and Comfort.

The importance of conducting business and exhibiting wares in artistic and refined surroundings is realized by no one more keenly than by the manager of the large modern department store. The whole plan of the store is to attract the shopper, and, once she is within the store, to make her comfortable. Large sums of money are expended upon lavish furnishings, comforts, and even luxuries from which there is no direct return. Owing to the gradual annexation of adjoining buildings which now comprise Philadelphia's large stores, little attention was formerly given to the construction of comfortable rooms for employees. Such quarters as they occupied were prescribed by conditions and as the store grew, these quarters were altered or moved as seemed necessary. While in certain instances there is still much to be desired, it is nevertheless true that more provision is being made for the physical comfort and well being of employees in department stores than is the case in any manufacturing occupation.

Lunch Rooms.

Three stores have equipped at considerable expense and inconvenience a portion of their roof as rest or lunch room for use during the hot weather—a plan which affords a gratifying change to the worker in Philadelphia's summer climate. Of the 55 stores visited, 38 have lunch rooms. These vary from a mere corner in a basement beside a heater where girls may eat the lunches they bring and perhaps heat water for tea, to a large dining room on the upper floor of a department store where wholesome food is sold at cost. The three-quarter hour lunch period allowed by the stores is too short for storewomen to go out and be served comfortably in the down-town restaurants at the busy noon hours and the girls are quick to avail themselves of the lunch-room service provided by all the department and most of the specialty stores. Also, in the stores a better meal at less cost is secured but, unless the lunch room is free from confusion and a separate rest room is provided, the girl loses the recreation of

which she is so much in need and which is often afforded by the open air. In one modern department store building, the employees' comfort and welfare are excellently provided for. The large lunch room has good natural light and ventilation and is never over-crowded although it accommodates an average of 1,900 to 2,000 people a day and 3,000 at the Christmas season. The food offers a wide variety of selection and is sold either on the cafeteria plan or in a small dining room where a full luncheon with service may be secured for 15 cents. By virtue of the great number taking advantage of the lunch room privilege, this restaurant has become entirely self-supporting. All the other stores do not come up to this standard, but a tendency towards general improvement is noticed on the part of most of them.

In the Market and Chestnut street specialty stores, where less time is consumed in getting to and from the coat and dressing rooms, many girls go out for lunch. One store allows an hour at noon. Lunch rooms in the specialty stores except in four cases supply no food, but provide tables and gas heating arrangements for soup, tea, etc., on an upper floor. Two stores have basement lunch rooms, which are artificially lighted and very poorly ventilated. In one store no provision whatever is made for girls who bring their lunches. They use a fitting room or whatever other available place they can find. In the specialty stores, lunch rooms for the saleswomen and for those in the workrooms are usually separate.

Rest Rooms.

Adjoining the lunch room in one large department store are several smaller rest rooms admirably lighted and ventilated. Two rooms are fitted with wicker couches, pillows and blankets which are changed twice a week. In two other rooms there are tables and easy chairs. Newspapers, magazines and a circulating library furnish good reading matter. The great lack in other department stores is that suitable provision for resting has not been made. Rest rooms are too small and not sufficiently isolated for quiet or rest. A few chairs and a couch in a room separated only by a low partition from a noisy lunch room as was the case in one store, or a row of rocking chairs in the space which serves as a passageway to the lunch room and dressing room in another store, is not a place to recuperate for a busy afternoon. In two other stores new rest rooms are in construction. In a sixth department store, there is no rest room whatever. Of the specialty stores visited, only two had rest rooms, two others had easy chairs in the lunch room, six had no provision for rest except that afforded by the lunch tables, and one had no private quarters whatever for the girls except the dressing room.

Toilets.

Toilets, usually barely sufficient in number for the regular employees, fall far short of the required one to twenty-five employees at the Christmas season when the force is increased by 40 to 50 per cent. In the larger stores these rooms are in charge of a matron and they are usually kept in the same good order as are similar facilities for customers.

Wash Rooms.

Many of the stores appreciate the difficulty of keeping the hands clean. Girls who are required to handle delicate articles should, after cleaning boxes and shelves and putting stock in order in the morning have access to the dressing room where hot water, soap and a clean towel are available. All stores allow girls to leave the floor after getting the consent of the head of the department or of the aisle man, and the two stores are to be commended which allow 15 to 20 minutes "relief" from the floor both morning and afternoon. Of 17 stores visited on Chestnut street and Market street, 11 provided no hot water. All supply towels, but where the roller towel is used, it is difficult to keep it fresh. Even where it is changed often enough, many girls object to its use and bring their own towel. Four stores use paper towels. Many stores supply no soap for employees.

Coat Rooms.

Store entrances for employees are separate from those used by customers. The girls leave their hats and coats in locker rooms or give them in charge of a woman who hangs them on racks by numbers. In one store the locker rooms are distributed throughout the building. Here girls use those closest to their departments, thus saving time and confusion. In other stores, lockers for the sales force are usually found in the basements, the clerical workers having separate accommodations near their offices at the top of the building. Two girls usually occupy a locker together and buy a key for 25 cents, which is refunded to them if they return the key on leaving the employment of the store.

Unless the cloak room is close to the department or to the employees' entrance, much time is lost in coming and going. Before going to departments the girls ring up on a time clock or their time is taken by a time-keeper. The cloak room facilities in the department stores in December are very congested. Temporary racks are put up on which two coats are often hung on one hook and hats piled as many as four high on the shelf. Before Christmas in one store that habitually closed 20 to 30 minutes later than the scheduled hour, girls waited from 15 to 20 minutes after closing time to get their outside clothing. In another store, 117 girls were in line one evening.

The crowd began to accumulate at 6.05 P. M. and the worker who was No. 57 in line reached the elevator with her hat and coat on at 6.35.

Seats.

Continuous standing is one of the general but avoidable hardships of the occupation of selling and although older employees state that in time they become used to standing, testimony from physicians is plentiful that constant standing is more injurious for young girls and women than many processes that require muscular effort. The law provides that there shall be suitable seats in the ratio of one to every three women and that these seats must be conveniently accessible. This law is however, often widely evaded in department stores even where other physical conditions are favorable. It is due to the distribution of tables and the construction of counters as much as to the tradition that a saleswoman must be "standing at attention" to attract business that there is such poor provision made for women to be seated. The space between the counter and the stock case is usually too narrow for two women to pass each other comfortably and where there are boxes of stock to be taken from the shelves behind them, there is constant jostling. If chairs or stools are in this narrow aisle, passing becomes even more difficult and the women often voluntarily do without a stool in order not to be constantly stumbling over it. In two stores where this space is especially narrow, the lack of seats was general. In two other stores where there is also little room behind the counter, a folding seat is used which closes up when the saleswoman rises. These seats have not generally been found restful, but they are undoubtedly better than nothing.

There is a very general use of aisle tables in stores to show bargain goods. They are often placed on the first floor in aisles where there is much traffic and in basements in rows not more than one to one and a half feet apart. There is little space in such an arrangement for a stool or chair and the salesgirl's strength is severely taxed by constant contact with crowding customers. A very much better plan is that of holding special sales at aisle-squares where the girl is in an enclosed space apart from the crowds that always gather about the bargain counter. She is thereby better able to show her goods and there is room for a seat. In one store these squares have a board or ledge at one end which serves as a seat. The number of saleswomen at these tables and aisle-squares without seats is much greater than at counters. A count taken in five department stores on one comparatively quiet day in May showed 495 girls at tables and squares entirely unsupplied with seats. It is on the first floor and in the basement that the lack of seats is most noticeable because on the upper floors the saleswomen are not always behind counters but freely move about. Here they are sometimes allowed to use the seats provided for

customers, but more frequently they are encouraged by the department head to "keep on moving" in order that no possible customer may escape.

The following enumeration of seats may err in favor of the stores because of the frequent absence of saleswomen from their departments. On the ground floors and in the basements of four stores there were seen in one day in May 235 women without seats. Of these, 151 were at counters where there was no seat whatever and the remainder were at counters where seats were so few that by the legal provision of one seat to every three employees, 84 women were unsupplied. Wooden packing boxes which were seen behind nine counters in one store, were considered seats for this count, but they were not regarded as suitable. The number of women without seats is much larger at Christmas and on days when special sales require a large number of contingent workers—times when there is of course special need of seats.

It is no doubt true that in many stores a seat can be had upon request, but the timid girl or the new employee fears to endanger her position by any seeming complaint. There are many times during the day when the saleswoman could be seated without neglecting business and a few stores find no difficulty in allowing them to do so. In other stores a more generous allowance of space behind the counters would undoubtedly be appreciated by many employees, to whom the constant jostling with other saleswomen is scarcely less taxing than the lack of seats. A seat should be within the reach of every saleswoman and she should be educated in its use no less than in the value of proper clothing and wholesome food.

Welfare Work.

Welfare work includes all movements in commercial and manufacturing establishments towards the physical and moral development of employees, but by far the most fundamental and far reaching of all welfare endeavor in the department stores is that of education. Even with a large amount of native ability, the employee's advancement is limited unless she has had at least a basic elementary education and some training for her work. Many women now in department stores left school before the enactment of the present compulsory education law and their small amount of schooling undoubtedly limits their progress and earning capacity. The mercantile house has always been open to young people, but with the steady introduction of mechanical devices, the numbers of children are perceptibly increasing. The Federal Census figures of 1910 for Philadelphia show 4.3 per cent. of the total number of women in stores to be under 16 years of age, a decrease of 1.7 per cent. in the figures for 1900. In the present investigation which includes 9,981 women in 55 stores, only 3.3 per cent.

were under 16 years. Most of the children are employed by the large department stores; practically none were found regularly employed by the five and ten cent stores, and in the women's specialty stores they represented only 2 per cent. of the women included in this study.

Educational Classes.

Realizing the limitations of these very young people, two stores have already established educational classes on the public school plan at which attendance from 3 to 5 hours a week during business hours is compulsory for all those under 18 years of age. All English branches are taught by teachers trained in public school work. The pupils enter the grade at which they left the public school and receive a certificate at the conclusion of the course. Beyond this, these stores provide advanced commercial courses with diplomas at the end of two years' attendance. In these classes general business principles, stenography, typewriting, arithmetic, English, and penmanship are taught. The shortcoming of saleswomen in the latter three branches often causes serious mistakes which are a source of financial loss to both the employee and to the house. In order to develop an intelligent interest and knowledge of merchandise, two stores give a course on the manufacture of textiles. All these courses, which are optional and free of charge, are aimed to identify students with the house and to fill from their ranks the higher positions as vacancies occur.

Classes in Salesmanship.

These same houses hold regular classes in salesmanship where the science of selling is taught. The different types of customers are explained to the students and the best methods of handling each. The power of suggestion in making a sale is also analyzed. For several years, evening classes in salesmanship have been held in the Girls' High School. This year the same school has established a permanent day course in collaboration with several stores. The plan is for the students to attend school half the day and to have remunerative experience in the stores the remainder of the time.

Instruction in Store Systems.

Three department stores require new employees to attend two or three sessions of classes in store system. Such teaching consists primarily in making out sales checks. An effective method in this work is used by one house where serious errors are thrown upon a screen for discussion by the class. In two of these stores occasional talks on the principles of selling are held. Another store holds similar classes which meet however with more regularity. These periodical meetings are a means of establishing contact with the girls and of allowing difficulties to be discussed and explained. In one department store there are no classes whatever for employees.

Educational Clubs and Social Life.

In the two stores where educational work is most highly developed, there are associations of women employees which conduct courses in languages, literature, hand work, dancing, physical culture, and even domestic science. For these classes, girls pay a nominal fee intended to cover only the cost of trained instructors. Sessions are conducted in the stores but not during business hours. These stores also maintain summer cottages where the younger employees are especially looked after. Not only through summer outings of a fortnight or more do these stores promote social life and entertainment among their employees; but throughout the year there are club meetings, dances, and musical concerts in which all are free to participate.

Medical Service.

Medical attendants are maintained in four stores usually by the beneficial society. Doctors are in attendance two or three mornings a week. Consultations are usually free of charge; otherwise, the fee is nominal. In all the large department stores except one, there are hospitals or emergency rooms with an attendant who is usually a trained nurse. One store maintains steadily a nurse who visits in the home of employees when necessary. Doctors frequently pay outside calls as well. In two stores separate dental rooms are fitted up. Dentists who give attention to the younger employees, often free of charge, are present at regular intervals.

Beneficial Associations.

All the large department stores except one have associations of employees whose object is financial relief in time of sickness or of death. The business of these societies is conducted by the store employees to whom officers are elected annually. Employees are required to hold membership in the societies after two to three months' continuous service. Membership, except in one store, is divided into classes according to the amount of salary received; and monthly dues are graduated from 10 cents for those receiving $3 a week or less to 40 cents per employee. In one house the dues are 60 cents a month for those receiving $10 a week or over. Dues are deducted once a month from the wages. Benefits, which are not usually allowed for less than one week's illness, are paid for a period not exceeding 10 to 13 weeks in any current year. The sums paid vary also from $1.50 weekly for the lowest paid group of employees to $5; in one store $6 is allowed for those receiving $10 and over. Death benefits vary from $50 to $100 or, in one house, to $200. In one of the above relief associations, membership is voluntary for all after two weeks' employment, except for messengers, who are cared for by a special association, in which membership from 2 to 10 cents weekly is vol-

untary. An admission fee of 50 cents is required for membership in the relief association of this house, after which monthly assessments are levied. This same store maintains a pension fund association in which membership for all between 20 and 50 years of age is obligatory after six months' employment. Eligibility to a pension begins with disablement after 15 years' service. This association is partly supported by the firm and into it all fines from employees for lateness or "blunders" are paid.

Upon termination of employment by resignation or discharge, membership in these beneficial societies ceases and dues paid to date are not refunded. Employees are not permitted to continue membership by paying dues during temporary unemployment. Slack business seasons frequently require a cutting of forces and due to no fault of her own, a girl may be dismissed and have no further claim upon the association unless at some future time she is reinstated, when full privileges are restored. Thus if she is out of work and waiting to be re-engaged, she is entirely without insurance. One girl who has been selling untrimmed hats for 5 years in a department store, was laid off five times in the past year. These intervals of unemployment aggregated approximately five months, during which time her membership in the beneficial association automatically ceased.

Such incidents are plainly inevitable under the present system. The confiscation of compulsory dues upon the cessation of employment is wholly without justification for the management. The money collected for dues would, if placed with an ordinary insurance company, assure the girl of benefits which would not arbitrarily cease and she would be protected from the manifest injustice of sustaining perhaps for years an association which her enforced unemployment might at any time relieve of all liability. Funds collected from beneficiary dues should in no case, be deposited with the firm, nor used by it as a business asset. In New York, a law forbidding compulsory mutual benefit associations in department stores went into effect in April, 1914.

Normal Hours.

The usual policy of down-town retail firms is to concentrate shopping hours as much as possible to the middle of the day. This tendency has resulted in the shortening of the saleswoman's hours. The majority of stores on Market and Chestnut Streets are open from 8.30 to 5.30 o'clock except from June 15th to September 15th, when they close daily at 5 P. M.; on Saturdays in July and August when they close at 1 P. M., and for two weeks before Christmas when they close at 6 o'clock. Beginning in the summer of 1912 one specialty store closed all day Saturday in July and August. In 1913

this same house and one shoe store closed during the same period and one other specialty store on Saturdays in August only. In the summer of 1914 all of the largest department stores adopted a similar plan for the same two mid-summer months. Since December 1913, most of the large down-town stores have advanced their opening hour from 8 to 8.30 A. M., thus decreasing the working day to 8¼ hours.

In order to adjust the working force to selling conditions, it has been found advisable to arrange the hours of the saleswomen so that some arrive a quarter to a half hour earlier in the morning and leave at a correspondingly early hour in the evening. Although 8.30 is the opening hour, employees who go on duty at this hour must have their hats and coats off when they "ring up" at 8.20 or 8.25 on the time clock. At closing time a signal is sounded. In one store the signal is given at 5.25, in another store it is frequently 5.40 or later before the bell rings. A third store which claims to close at 5.30 was found most irregular. Unlike other department stores, customers are allowed to enter after that hour and the girls are kept until 5.55, 6.10 or 6.30. This is one of the stores that requires the girls to "ring up" at 8.20 A. M. In no store may the employee put away her stock, cover her goods or leave her counter until the signal is heard. If she has a customer, the saleswoman is expected to continue serving her with the same good will as at any other time of day. The clerical forces and workroom hands begin work at 8.15 and finish at 5.30 o'clock. Lunch time for this force consists of one hour, for the selling force it is three quarters of an hour, taken between 11 and 3 o'clock.

Overtime.

Overtime has always been a bad feature of department store work especially in the Ghistmas season; and if such instances as are cited in the following pages occur under the present state regulations it is almost inconceivable what must have been the hardships in former years when a sixty-hour working week was legal.

Sunday Work.

Sunday opening is practically unkown in Philadelphia except in the foreign quarter. The owner of one large department store in South Street which is open from 10 to 4 o'clock on Sundays disapproves the practice and says he would be entirely satisfied if the law forbade Sunday opening. He justifies his action, which is followed also by the smaller stores, by maintaining that the custom of this neighborhood demands it. Only one large store, in this neighborhood remains closed on Sunday.

History of Christmas Closing.

In the heart of the city no store of any size except candy and novelty stores is open after 6 or 6.30 P. M. during the Christmas season. For many years one large department store stood alone for holiday night closing while every other store was open until 10 or 10.30 P. M. two weeks before Christmas. This store held that the better class of shoppers respected the sacrifice in the interest of their employees and that the day business of the store correspondingly increased. In 1904 another large store said through its advertisement in the daily papers, "In direct dollars it does not pay. The cost of light, service, etc., runs away into thousands." Then began a real movement to get the stores to unite and close at 7 P. M. Public feeling grew and in 1909 thousands of appeals were sent from customers to the store managers. In that year four stores cut down the number of open evenings from ten to five, and a fifth store closed at 6.30 instead of at 9.30 P. M. The next year, 1910, four department stores took action and 6 P. M. was set as the latest closing hour during the entire season. It is easy to comprehend the satisfaction of the superintendent of one large department store who said that the air of content on the part of the selling force, knowing that they would not be required to work nights as they did formerly, was shown in their attitude to their work and consequently stimulated trade.

Holiday Overtime.

In 1913, there was still however, some night and Sunday work for the selling and office forces in the large department stores. Some saleswomen worked until 8.30, 9 or 10 P. M., two or three nights a week at renewing or moving stock. Also many inspectors whose regular hours were 7.30 A. M. to 5 P. M. worked until 7 P. M. before Christmas with no rest except three-fourths of an hour for lunch. A trading of workers was found between two large stores. The regular night cleaning women in one store took positions as saleswomen in the second store for two weeks before Christmas, thus working 13 hours a day. Sunday, December 14th, was a busy day in three of the stores, when stock was arranged for the week to come—the busiest perhaps of the whole year. In another store 50 girls who were willing to work Sunday from 9 A. M. to 4 P. M. were recruited from all over the building. Eleven of these thereby worked a seven-day week in spite of the law, which forbids the employment of women for more than six consecutive days. The same violation of the law occurred in another Market Street store at least two Sundays in November. Here 14 girls worked Sundays but had no compensating free day in the week. Eighteen down-town saleswomen obtained work in suburban stores, giving as their reason that they had worked Sundays in November and were too tired to cope with the Christmas rush.

Accurate information on schedules of hours is very difficult to obtain, except by continuous personal contact with the girls themselves, or by visits to their homes. This is illustrated by the instance of a confectionery store employing girls regularly 53 hours a week, where 3 saleswomen were required to work 3 extra evenings before Christmas, thus making a 65-hour week. When interrogated, the manager said, "No, only the men stay at night." The young women also said there was no infringement of the law. It was only when the saleswomen were questioned away from the premises that the 65-hour schedule was confirmed.

Clerical Workers.

The greatest offender in night and Sunday work is the clerical department of one of the largest stores. In many cases where the overtime does not amount to a violation of the law it is continuous and planned without recognition of a girl's physical limitations and of her inability to stand irregular and excessive hours of work. For five months in the winter of 1913 many girls in the audit and bookkeeping departments in this store worked overtime for one, two or three evenings almost every week. Five girls are known either to have left permanently or to have been away five or six weeks for recuperation. That a girl fears to endanger her position by complaining is understood from the experience of an employee four years in this department who was dismissed when she refused to work the Sunday after Christmas. She had been working three nights a week for two weeks previous to that. The clause in the Woman's Act which permits a 12-hour day for three days in a week where a holiday occurs was responsible for great strain upon the workers in this store. Most of the girls worked Sunday, December 28th, from 9 A. M. to 5 or 5.45 P. M. or on New Year's Day from 9 A. M. to noon, and five girls are known who worked both holidays and at night. Their daily hours were $10\frac{1}{4}$, $10\frac{1}{2}$ or $11\frac{1}{2}$ instead of 10, their weekly hours over 54, and in addition they worked nine continuous days. At filing, girls worked three nights Christmas week and again New Year's week, making days of $11\frac{1}{4}$ and $11\frac{3}{4}$ hours. Some of the work in these departments is done by small girls. A system which sends children of 15 years home at 8.45 P. M. four times in one week can not be said to be well planned. Many of the office people are allowed to come to work at 9 A. M. the day following night work, but they often come of their own accord at 8.30 in order not to get behind in their work. Not only was the strain of the Christmas work in itself excessive, but it came in the midst of a period of over five months of night work. In this store overtime three days a week was frequent throughout the year. That overtime work is unsatisfactory is borne out by the emphatic testimony of a superintendent of an-

other large store that "two hours' work in the evening is not worth one before 5 o'clock." This overtime work in the clerical departments of large stores occurred frequently in former times—especially toward the end of the month. The elimination of this in other stores than the one just described has done much to put an end to such conditions.

Stock Taking.

At some time in the year, usually shortly after Christmas, it is the universal custom for stores to take an inventory of stock. Stock taking usually occasions some overtime for the saleswomen but the buyers and heads of departments often so arrange that it can be done during business hours. A study of stock taking in 12 large stores showed that three stores accomplished the work by day. In three other stores, girls remained three or four evenings until 7.30 P. M. and were given three-fourths of an hour for supper with a supper check amounting to 50 cents. They were allowed to come to work an hour and a half later than usual in the morning of the day they remained. A seventh store kept girls four nights until 10 P. M. for one week. They were given 35 cents for supper which they were allowed to buy outside the store. The other five stores kept all the saleswomen two or three nights until 7.30 or 8 P. M. and allowed them a supper check. Girls in some cases went without supper in order to get home early, as they were never warned of extra work until 4.30 to 5 o'clock in the afternoon. Advance notice of overtime was given in three stores only although the need of remaining to complete stock taking must have been seen by the buyer at least one day in advance.

Overtime such as has been described breeds discontent among a tired lot of workers and common justice would seem to demand compensation for this overtime. A mere supper check for a night's work in no way repays a girl for the loss of her own time and vitality. All overtime in telephone operating, the strain of which may be compared to much of the work in question, is paid for at the rate of time and half time and double for holidays. Organized factory trades pay the same rates and all factory work pays at least pro rata for overtime.

Neighborhood Stores.

Conditions in the neighborhood shopping centres differ from those in the heart of the city. Such centres are Kensington, Germantown, Frankford, North Philadelphia, West Philadelphia, and South Street —districts some of which were former villages and which still bear the name they did prior to their annexation. In each neighborhood the largest stores and those which show the characteristics of the locality were visited. Bainbridge Street, the shopping centre of the colored people, has not been covered in this investigation because

the shops seldom employ more than one girl. A characteristic neighborhood shopping, centre is made up of one or more large department stores, millinery, shoe and men's furnishing stores, provision stores of all kinds and one or two five or ten cent stores.

Description of South Street.

South Street, however, is unique. It is the foreign shopping centre and hither come the southern Europeans, Italians, Russians, Poles and Jews. Here they find the wares and customs of their own countries. There are two department stores in this neighborhood—a feature peculiar to Philadelphia. South Street is lined by small stores owned by one man who frequently employs a "barker" to display sample articles on the sidewalk. The neighborhood resembles somewhat an ancient Hebrew bazaar. Many of the storekeepers and customers are unable to speak English, and as Yiddish is the language most used, saleswomen who speak Yiddish are preferred. In this neighborhood there has been for years a tendency to disregard the law, due perhaps to ignorance of its provisions or to alien standards. Occasionally school girls of 13 and 15 years were found working without certificates. In one large store four distinct violations of the law were observed at one time. The hours are late and the customers difficult to serve but the girls have much freedom. One hour is given for lunch. Often this period is extended a few minutes and the girls hasten to the "movies" or to an ice cream "saloon" for a temperance drink or sundae. Besides the permanent stores, there is an open market for six blocks in South Street on Tuesdays and Saturdays. The provision wagons are brought in from the country and backed up to the sidewalk. From push carts are sold fruits, meats, vegetables, pots and pans, dress-goods, shirts, aprons, jewelry, trinkets, etc. The women bicker over sales as they do in their countries in Europe. The busy season in South Street is from the first of September to the Jewish holiday, Yom Kippur, the day of Atonement, which comes in October. When Pesach, the Passover, comes in March or April, the small Jewish stores are closed, but the one large store remaining open is crowded and does a big business. In this store the Fourth of July is the one holiday in the year. The store is open from 10 to 4 o'clock on Sundays the year round.

Other Shopping Centres.

The shopping centres in Kensington, Frankford, and North Philadelphia are in the midst of busy manufacturing districts and as a consequence much of the shopping is done in the evenings. In North Philadelphia two leading stores tried closing at 9 o'clock on Friday and Saturday nights but the proprietors found it resulted in a loss of trade and the old system was resorted to. In Germantown, on

the other hand, storekeepers agree that night shopping continues only because of tradition and the local association of business men is trying to effect a change.

Evening Shopping.

Neighborhood stores in manufacturing districts begin to teem with activity just as the saleswomen in down-town stores are hastening to count up their books or prepare for the evening closing. About 4 o'clock, groups of women with children, or men and women workers from the nearby mills begin to surge through the street, gazing first into this window, where a candy-maker demonstrates "snow" then into that window, where numberless hats amidst floral decorations are marked "Cut Rate, $1.98." At this hour, saleswomen awake from the tedium of the day and try to catch up in the day's sales. From 4 to 5.30 P. M. this mass of humanity passes from store to store, buying trifles, looking about and enjoying life. But just as suddenly as the crowd appeared, it disappears, leaving a pall in the business world. It is supper hour—six o'clock. In the stores too it is rest time and the force dwindles from ten to perhaps three saleswomen who wait upon the "strayers-in." The other members of the force seek their homes, the small dressing room of the establishment, or a cafe of the district for their evening meal. At 7.30 comes another change. Little by little humanity again accumulates until the store resembles a bee hive. It is estimated by some storekeepers that more business is done on Friday and Saturday evenings than during the entire remainder of the week.

Hours.

Small shops are open every evening, but the larger stores close at 6 or 6.30 o'clock; except on Mondays, Fridays and Saturdays, when the hour is extended to 9 or 10 P. M. Employees usually work three long and three short days. In November, 1913, when the Woman's Labor Law went into effect, there was a general re-arrangement of hours. In stores which are open every night, the regular employees were kept alternate nights through the week, or a second shift was put on for the evening hours, as was formerly the custom for Saturdays only. In the stores which are open on Mondays, Fridays and Saturdays only, the regular employees remained, taking a longer period for meals or coming in correspondingly late in the mornings in order to keep within the legal limits. In these stores, girls under 21 years are now seldom employed. A large number of extra saleswomen are employed Mondays, Fridays and Saturdays from 2 to 9 P. M. or for evenings only from 7 o'clock.

Holiday Season.

During the holiday season the business hours are greatly extended. Two weeks before Christmas all the stores begin regular evening opening advancing the closing hour as the 25th approaches. At this season the managers of the shops open the doors and bar them back, no matter how bitter cold the night. This not only facilitates passing in and out, but exploits the glittering interior and invites patronage. It is difficult to stem the tide of humanity. Simply to manipulate passage from the lower to the upper floors of the buildings, a man stationed at the foot of the stairs shouts, "Going up, keep to the right: coming down, to the left."

More Christmas overtime was noted in Kensington than in any other district. At least five stores remained open for three nights before Christmas until 11, 11.30 and 12 P. M. In four stores in December girls under 21 years of age were found working after 9 P. M. The difficulty in detecting such infractions of the law was often apparent. Even the forewoman in one store was doing her part to evade the inspectors. During the evening the investigator heard her remark to a fellow-worker, "Oh you cutie, going home at 9! Here I am only 18 and they take me for 21. Watch any old inspector making me march out at 9 with the babies!"

Family Stores.

In these neighborhoods competition with the small stores managed and tended by one family is vigorous. If an outside helper is engaged it is frequently claimed that she belongs to the family and is therefore not working for direct compensation, in which case her labor is not covered by the Woman's Act. One manager spoke laughlingly of the number of families that had increased since the new law went into effect. Among small shop keepers in West Philadelphia, a custom exists of engaging a helper who "sleeps in." She makes her home with the family and helps both in the home and in the store.

Physicial Conditions.

The physicial conditions in neighborhood stores resemble very nearly those in the five and ten cent stores and will be described in that connection. While they are not so good in general as the conditions in the down-town stores, there is greater freedom and leniency which often more than compensates.

Five and Ten Cent Stores.

There are in the city about 25 three and nine, five and ten, and twenty-five cent stores. This number is increasing rapidly. Eighteen

are circuit or chain stores owned by five companies and are under the supervision of a central or district office, eleven belonging to one syndicate which operates stores throughout the country. All chain stores were visited for this study. Three of these employed as few as five regular women workers and the largest two averaged about eighty each. Of those stores not belonging to a chain, one only employed as many as two regular helpers. Practically all of these are owned by families—usually foreign—living on the premises. Five and ten cent stores in Philadelphia employ about 450 women. These stores are scattered throughout the city and are always to be found on the principal street of every shopping locality. Competition is keen among them, as is evidenced by the fact that they usually do not appear singly in any neighborhood and are frequently found side by side or directly opposite each other. These stores and the type of goods sold by them are too widely known to need any description here. They attract a large number of young and untrained girl workers who are lured by the advanced initial wage over that of many factory trades and by the higher social caste of the salesgirl. The conditions under which they work depend largely upon the traditions of the neighborhood in which the store lies and upon the manager who, as said before, has almost complete freedom in regulating conditions under which his goods are distributed. In addition to the regular force, 10 stores employ extra girls for 2 to 4 hours during the evenings they are open.

Hours.

The shortest weekly working-schedule, 52¼ hours, was found in two establishments, and the longest, 55 hours, in four. The latter schedule was accounted for in every instance by a one hour extension of the regular closing hour on Saturday night. The usual working week in the five and ten cent stores is 54 hours. This is divided into three 8½ hour days, two 9 hour days and one 10 hour day. In one store it was so planned that girls worked after supper only every other week. In all but the central part of the city where the stores close at 6 o'clock every evening, each girl works 2 or 3 evenings a week until 9 or 10 P. M. On these days the girls work in relays or receive additional time for lunch and supper. This extended lunch period is not a bad arrangement where girls live near the store and can use the extra time for resting at home, but one girl receiving a two hour lunch period complained that she lived too far away even to take the street car home, and as the store provided no place for her to rest, she usually spent her time in the street looking into the shop windows. The seven stores in the Market and Chestnut Street district close every evening at 6 o'clock (Saturday

6.30), thus reducing the usual 54 hour week by 1 to 1½ hours. In this neighborhood, however, the one hour lunch period is in five cases reduced to three-fourth of an hour. The normal working week in the five and ten cent stores is thus from 3 to 4 hours longer than in the department stores. This fact added to the evening hours in the five and ten cent stores makes the work scarcely less taxing than that in the department stores. While on duty, the salesgirl must be constantly on the alert not only for customers but for the attractive display of her wares. She takes complete charge of her counter and must see that it is dusted and tidy before the day's selling begins and that it is kept in order and well-stocked throughout the day. From a small supply of stock under the counter, she constantly replenishes the goods sold, ordering from the stock room as her reserve stock disappears. She wraps all her own parcels and rings up the sales on a cash register.

Holiday Trade.

There is no class of stores upon which the pressure of business at certain seasons is more apparent than on the five and ten cent stores. They provide novelties for every holiday but especially at Christmas time are their wares in demand. During the busiest shopping hours for a week preceding the holidays, it was impossible to gain entrance to or exit from some of these stores except by moving with the crowds. The investigator on one occasion tried to force her way through a crowd in order to reach a salesgirl at an opposite counter, but the public immediately and very audibly expressed its views of such behavior, and the offender was obliged to progress up one aisle and down another before her destination was reached. These are the conditions with which the saleswomen have to contend. Many were selling and packing at aisle tables where there is no escape from the crowds. The experience of one saleswoman illustrates the intensity of this crowding. She had been transferred from her regular department to pack an aisle table. In the stream that jostled past, were many half-intoxicated people, and boys who struck out with their elbows as they marched along. The girl as a result was taken to a hospital on Christmas morning, where she remained for a month.

Trade begins to increase about November first and some stores begin as early as this to augment their sales force. Just before Christmas the five and ten cent stores practically without exception reported an almost exact increase of 100% in their working force. From 10 to 14 days before Christmas, the 6 o'clock closing hour began to lengthen by a half hour for all stores in the centre of the city. In this section the latest closing hour for five and ten cent stores was 9 o'clock, but in other parts of the city, the usual evening

closing stretched to 10, 11 P. M. and even later as Christmas approached. The numbers of evening saleswomen increased in the same proportion as the full time force. With the keeping open every night before Christmas, some re-arrangements of shifts of workers was necessary. A few managers devised very creditable schedules, where, by carefully planned rotating shifts, they were able to care for the trade. In many cases however, girls who work in stores and factories in day time put in part time in the evening in the stores. Eliza's working record for three weeks preceding Christmas was probably the most striking example of this sort discovered. By day Eliza was doing odd jobs in a large mill where her regular working hours were 54. After 7 o'clock, one could see her in a large five and ten cent store dressed in a white apron and cap dishing out ice cream to a hungry multitude. During the first week she was employed 7 hours in the store which, with the mill work, made an aggregate week of 61 hours. The week just preceding Christmas Eliza worked 13 hours in the store, making a total week of 67 hours.

Provision for Employees.

The lunch and dressing room facilities provided by these stores vary in comfort and cleanliness. Occasionally there were cloak rooms but in the smaller stores, hooks on the wall served for wraps. In three stores all the girls went home at mid-day and no lunch room was provided. In two of the Market Street stores, excellent special lunch rooms were provided; usually an oil cloth covered table in the cloak room served at noon. These combined lunch and cloak rooms frequently had an untidy appearance. Cobwebbed windows and unswept corners were not unusual and discarded papers and fruit lay about. Receptacles for waste were not provided. The rooms seldom had the appearance of being regularly swept and inquiry showed that sometimes this duty devolved upon the girls themselves. In three stores the toilets were immediately adjacent to the lunch rooms. On account of the old buildings in which many of these stores are housed, the toilet facilities still frequently fell short of the standards of the new law.

The following table summarizes the physical conditions found in the 55 stores investigated. Facilities were considered adequate where accommodations were sufficient for the number of employees or where they complied with the provisions of the law.

TABLE NO. III.

Summary of Physical Conditions in 55 Establishments.

	No provision whatever.	Provision inadequate for number of employees.	Clean.	Good light.	Good ventilation.
	%	%	%	%	%
Rest Rooms.					
Five and ten cent stores,	80	15	15	20	10
Specialty and small stores,	67	22	33	33	33
Department stores,	24	47	53	47	41
Wash Rooms.					
Five and ten cent stores,	5	30	45	85	80
Specialty and small stores,	.....	50	72	83	78
Department stores,	6	53	71	77	82
Lunch Rooms.					
Five and ten cent stores,	20	65	45	70	65
Specialty and small stores,	50	17	56	50	44
Department stores,	24	24	88	88	77
Toilets.					
Five and ten cent stores,	.....	90	60	75	80
Specialty and small stores,	.....	17	83	83	78
Department stores,	.....	65	82	100	82

Total Number of Stores Used as Basis.

Five and ten cent stores,	20
Specialty and small stores,	18
Department stores,	17
	55

III. WAGES.

Methods of Payment.

The prevailing method of paying women in mercantile establishments in Philadelphia is by the flat or drawing rate, which is a fixed sum per week. Pay day occurs usually once a week, although two large department stores pay only once a fortnight. In small stores where the management observe personally the progress of employees, the saleswoman's weekly salary is usually governed by her age or by the length of her experience. This is not true however of the larger stores, where the complexity of the management necessitates

the keeping of a close record for each employee. Each store has its own system which is under the supervision of the superintendent. In large ledgers or in card files are kept every employee's sales, latenesses, "blunders" and weekly wage payments. The theory of determining a saleswoman's wage is as follows: Her weekly wages are divided by the amount of her total weekly sales and the result shows the percentage cost of her maintenance for that week. Should she maintain a sufficient decrease in this percentage for a representative period, she is a candidate for salary promotion. This cost of selling varies by seasons of the year and by departments. Thus in summer when business is dull it is relatively high. Also in the notion department where the small sales total a comparatively low sum and where profits are proportionately small, the cost of maintenance is higher than in clothing for example where sales and profits are greater. Due allowance for these varying circumstance should be made by the management of the house in apportioning wages, for no saleswoman should be made responsible for the cost of the department in which she is placed. In three large stores the books are gone over twice a year for ratings and salary increases. The records of these stores showed examples of both rapid and slow advancement. Two cases of girls still employed in one store at the time of this investigation are the following.

Case A.		Case B.	
Date of employment, September 1910.		Date of employment, January 1906	
Salary, ...	$4 00	Salary, ...	$7 00
Advances.		Advances.	
Oct. 1910, salary, ...	$6 00	Sept. 1911, salary, ...	$8 00
May 1911, salary, ...	9 00		
Feb. 1913, salary, ...	10 00		
Feb. 1914, salary, ...	12 00		

Should the books show that a saleswoman is not doing good work, she may be called to the office for an explanation. Where the blame is to be traced to uncongenial surroundings due either to her work or to the person in charge, she may be transferred through the superintendent to another department. In this way she is given several trials. It is generally true of stores that no department head or aisleman is empowered to dismiss a girl.

Commissions.

In order to increase business and the selling capacity of employees, several houses pay in addition to a fixed rate, a small percentage on goods sold. One large department store pays twice a year to all saleswomen who maintain a high selling standard, a commission on all sales over and above those covering their drawing rate. These commissions vary by departments from 2% to 6%. In this house

the rate for each department is being constantly studied and revised with a view not only to keeping up profits but also towards equalizing the opportunity for salespeople in the various departments. Another large store pays ½% on all sales regardless of the department or of profits. One women's specialty store pays 1% on all sales, two others give percentages only in busy seasons or in the more profitable departments. Two stores pay commissions on sales amounting beyond a given sum or on single articles over a certain price. Another department store is instituting a commission system for all salespeople. Thus only 7 stores were found where commissions were regularly paid to women. Most women who have tried the commission system of selling speak in its favor; there are nevertheless a few complaints against it. The department head may show prejudices by keeping some young women at arranging stock or other work while the more favored ones are selling. Furthermore, in those departments featuring novelties the amount of sales depends largely upon the reception of the goods by the public. Another and perhaps the most just criticism of this method of payment is the unequal advantage to women in the high and low profit departments of those stores where the opportunities are not uniform. Saleswomen become identified by customers with one department and are not frequently transferred. The commission undoubtedly increase the earning capacity of the ambitious woman and encourages her to build up a clientele of her own. Girls sometimes however "hog sales" from each other—a practice by which they soon come to be known among each other as "grabbenheimers."

Premium Money.

Practically all stores pay premium money, popularly known as "P M," which is an incidental addition to a saleswoman's earnings. A certain sum, 10, 25, 50 cents or even a dollar, is paid for the sale of odd lengths and sizes, articles in which the buyer has overstocked, or for slow selling goods which must be disposed of in order to keep the stock moving. P M's are also paid in order to encourage salespeople to select evenly from the various styles and sizes so that odd stock does not accumulate. In one large store girls receive one-half of the P M's, the other half going into the beneficial society. One house allows extra P M's before Christmas and two other large stores not otherwise giving a commission, pay a bonus of 1% on all sales during the month of December. A third gives ½% for the same time.

Employees' Discount and Charge Accounts.

Besides these occasional additions to wages, all large stores allow a discount of 10% on purchases made by employees. Four women's specialty stores give 20%. Also, all large stores allow charge ac-

counts to employees. The amount outstanding at one time is regulated by the employee's salary, and a certain proportion is deducted from the weekly pay until the account is closed. In one store the rule is that charges must be paid the following week, in another, five weeks are allowed for payment. Most stores are lenient however, toward their trusted employees and often greater privileges in the matter of charges are extended. The system of credit to employees not only saves the girls 10% on purchases, but very much relieves the necessity of their dealing with purchasing agents to whom they pay 10% interest on orders for clothing and other merchandise.

Clothing Requirements.

In most stores black clothing is required except for four or five of the warmer months, when white blouses may be worn. Other stores allow white blouses with a dark skirt the year round. This necessitates greater outlays for clothing and laundry than in other occupations. In three stores the messengers wear special aprons or dresses which are provided and kept clean at the store's expense.

Paid Holidays.

So far as is known, the custom of paying wages for holidays when the store is closed is universal among merchants. These holidays are uniform in the centre of the city except in the case of one large store which this year for the first time, gave as additional holidays Lincoln's and Washington's birthdays and Labor Day. For the first time, this year many of the stores closed all day on Memorial Day. Holidays vary in different sections of the city.

Vacations.

In additions to holidays, nine department and women's specialty stores in the centre of the city give summer vacations with one week's pay to employees who have been one year in their service. Eight give as much as two weeks with full pay to employees two years and over in the service. Five department stores in outlying districts allow holidays and summer vacations with at least one week's pay, and two five and ten cent store syndicates do the same. In most stores an unwritten law requires newer employees to take one or two weeks off at their own expense in the summer when business is slack. At least seven stores in the centre of the city impose this so-called vacation also in January or February. Time lost on account of illness, except in stores where there is a beneficial association, is usually at the employee's expense, although there are occasional exceptions to this rule. In the smaller stores, where frequently a girl's private circumstances are known to the manager, leniency is often shown, and one case is known of a girl receiving full pay during seven weeks' illness.

Fines for Lateness.

Deductions from earnings in the form of fines are frequent. For lateness girls are usually "docked" one cent a minute or ten cents for the first fifteen minutes. After the first quarter hour, the rate decreases to perhaps 25 cents an hour up until 10.30 A. M. when a proportionate fraction of the day's pay is lost. Some stores permit an aggregate amount of lateness in a week before a fine is imposed and many others allow an occasional few minutes "grace." In one store, however, if tardiness occurs more than "occasionally" a girl may not "ring up" on the clock until 10.30, thereby losing one quarter day's pay. If caused by an unusual circumstance, lateness may be excused by a visit to the superintendent's office. Two of the large department stores reduce the fine for lateness by one-half for the junior help.

Fines for Mistakes.

Besides lateness, there are frequent "blunders" for which girls are charged. Such a mistake as writing a wrong name or address on a sales slip involves extra time and money to the firm and the 25 cent fine imposed is intended in part to cover this expense. Failure to ring up on the time clock on entering or leaving the store is a serious offense and may cost from 25 cents to one-half day's pay. Missing one page in order in the sales book may mean 10 cents; loss of a sales slip, 25 cents; neglect to paste on a transfer sticker. 10 cents; failure to tear a voucher straight, 25 cents. Where goods have been charged at a wrong price or where short change is made, the offender is charged with the full amount of the shortage. In several stores an effort is made to trace these mistakes which if successful, lessens materially the loss to the cashier or to the one responsible. Otherwise the girl bears the full expense, a part of which is deducted weekly from her wages until the amount is made up. Such mistakes are frequent, especially at Christmas time. Grave offenses, such as dishonesty, are punished by one or two weeks' suspension unless the circumstances warrant complete dismissal.

In one store the money from fines goes into the beneficial association. Sometimes all fines except for lateness, which is regarded as a short absence, are used for welfare work. In other stores they go to the credit of the respective departments or to the firm.

The system of fining is very unpopular among girls and often causes ill-will which reacts unfavorably upon the house. Girls accept with more willingness fines for lateness than for mistakes, for which they feel they are not always to blame. For this reason several of the smaller Chestnut Street stores have practically abolished this method of correction, but so far however, this is true of only one large department store in Philadelphia. In this store each girl

is under the supervision of a floorman or the head of the department who calls attention to blunders and admonishes when necessary. If this is without effect, the girl may be called to the superintendent's office for an explanation. As a last resort girls have been suspended $\frac{1}{4}$ to $\frac{1}{2}$ day, but even this custom is being discontinued. It occurs rarely that all methods are of no avail, but where this is the case, the girl is dismissed. In another department store the fines are almost negligible, having averaged about $1 per employee for the past year. Many stores remit fines for the month of December.

That girls sometimes need corrective methods is not disputed. In one store employing 60 women, 39 came late on the morning when 8.30 instead of 8 o'clock opening was inaugurated. On the same morning in a large department store, 30 to 40 habitual late-comers extended their tardiness one-half hour, until on the fourth day of the 8.30 opening, the entire group was sent home by the superintendent for a half day. Another reprimand administered in one of the larger five and ten cent stores was that of having habitual late-comers sent to the superintendent's office before going to their departments. The shame of being frequently seen in this undesirable position soon took moral effect. Such personal reprimands are much more effectual than the continual imposition of a fine. The manner in which fines can accumulate is shown by the actual but no doubt unusual experience of one woman who states she has forfeited in 12 years with one house $700 in fines for lateness.

Explanation of Wage Material.

For the wage tables which follow, the data was copied by the investigators in only one store. In all other stores, this clerical work was done by the store employees. Opportunity was however afforded the investigators or the regular agents of the Department of Labor and Industry to verify the work done. The method of verification pursued was as follows: A count of all employees submitted by each store was made and the number was verified from the store records. The report on wage, age, and length of employment was verified by choosing one hundred or more individuals at random from the records submitted by each store, and checking them off from the books. Information on all points could not be secured from all stores because of the various systems of keeping records. Many points on which information was sought were not on record at all. Such information would only have been available through a personal interview with each employee whose wage record was taken from the pay roll. The scope of this investigation did not however permit of such a procedure—excellent as it would have been.

The rate of pay was taken for saleswomen, messengers, wrappers, inspectors, cashiers, stock and clerical workers. Women in the

workroom, alteration and advertising departments, stenographers, telephone operators and special office help were not included. No buyers, heads of stock or women in executive positions appear in the records.

Of the five stores from which wage material was secured, only two, stores A & B, pay commissions to saleswomen. All others pay premiums. In Store A, wages began to be advanced by departments January 1, 1914. As a result the flat rates for this store were obtained only as the promotion was completed. To this rate was added the weekly average of commissions for each saleswoman for the previous twelve months. In Store B, to the rate of pay of each saleswoman for one week (October, 1913) was added the average commission of all saleswomen receiving the same drawing rate This method was followed by no other store and the data for this house does not therefore wholly correspond with that of the other stores. It was first decided not to include the figures of this store in the total of all stores, but it was found that by so doing the data would not be perceptibly altered and this material has therefore been combined in Tables IV and X with that of the other stores. The week for which these figures were given represents a season when department store trade runs high. In Store C, to the drawing rates of each saleswoman was added her weekly average of four months' premiums (June to September inclusive). Only 17% of the saleswomen in this store received additions to their wages. In Store D the drawing rates were taken for the months of February and March, 1914. To these rates were added the weekly average premiums for the months of September, October and November, 1913. In this store, 44% of the women received additions to their drawing rates. In Store E, only the weekly drawing rate for one week in February was taken.

Except in the case of saleswomen, no addition to wages occur. For all other employees therefore the flat weekly rate is the figure used. The wage statements in no instance take into account the frequent deductions for absences, enforced vacations, lateness and blunders. The wages quoted in the tables do not therefore represent actual earnings. Furthermore the fact that in two stores the additions to wages were taken for seasons of lively business, tends also to make the wage quotations high.

Age and Length of Employment.

An endeavor was made to secure along with the wage statements of each employee additional information as to her age, and the length of time she had been in the employ of the house. Both these points could be obtained for all employees in two houses (A and D) only.

For Store D both age and length of employment were secured for the saleswomen; for other employees the age only was obtained. The ages of employees over 21 years of age were not on record. For Store C, the length of service of all employees was secured and the ages of messengers, inspectors and audit clerks under 19 years. Store B kept no age records and was unwilling to report on length of employment.

Table IV shows the wages by occupations paid to 7,525 women employees in five department stores. Almost half the messengers received $2.50. Four dollars is the wage received by the largest number of stock girls, more than half the total number receiving $5 and under; $6, the wage of clerical workers and tube cashiers, more than half receiving $6.50 and under. Of inspectors and wrappers whose duties do not include cashiering, the greatest number received $4; and of inspector-cashiers, $7. Inspectors and wrappers progress to cashiering. Of girls in these occupations, more than half received $5.50 and under.

To the weekly rate of the above classes of workers there are no additional earnings, hence in every case they were receiving the even dollar or half dollar wage under which they were grouped. This is not true of all saleswomen; however, scarcely over one-fourth of the saleswomen in all five stores were receiving additions to their weekly rates. Saleswomen comprise 52.1% of all store workers; $8 to 8.49 was received by the greatest number, and more than half received under $8.50.

Tables V to IX inclusive enable comparison by occupations of the wages paid in different stores. The wages paid the greatest number of workers in any occupation all able workers may attain. Thus we see that in Stores A and B, the largest number of saleswomen, or over one-third, receive $8 to 8.49, beyond which figures there is a marked decrease in the percentage of workers. In stores C and E, the majority of saleswomen, about one-fourth, receive $7 to 7.49. A goodly proportion still receive $8 to 8.49, after which the numbers decrease immediately. In store D, the majority wage for saleswomen is $7 to 7.49, received by less than one-fifth of the workers, after which figure the proportions decrease gradually up to $10, and then comes a more sudden falling off. In store A, only 39.7% of the saleswomen receive under $8.50; in store D, 42.7%; in Store B, 60.6%; in Store E, 62.9%; and in Store C, 67.3%.

Of the clerical force, which comprises about one-fourth of the workers in these stores, about half receive under $8.50 in store A, about four-fifths in stores B, D and E, and nine-tenths in store C. The wage paid the largest number of workers is $5 in store B and $7

in store D. In store A, an almost equal number receive $8 and $9; in store E, $6 and $7; and in store C, almost the same numbers receive $4, $5 and $6. In the other occupations, the same variation in wages among the stores occurs.

Table X shows by cumulative percentages the wages of all the women in each store and of the total in five stores. Half or more than half of the women in store A were receiving under $8.50; in store B, under $8 (49.7%); in store C, under $6.50, and in stores D and E, under $7.50. Of the total, 49.7% were receiving under $7.50; 50.9% under $8 and 69.2% under $8.50. About four-fifths of the workers were receiving under $10 and all but 1.6% were receiving under $16.

Table XI shows the relation between the wages received and the ages of employees in four stores. One-third are under 21 years of age. Of the two-thirds over 21 years of age, one-fifth (20.3%) were receiving under $7.50, almost one-half (47.4%) under $8.50 and two-thirds (62.0%) under $10.

In Table XII, the wages paid to employees in four stores are shown in relation to length of service with the present employer. More than one-half (55.9%) of the workers have been less than 2 years with their present employer and 75.0% not more than 6 years. In one store not included in this table, 49.3% of the saleswomen were employees of less than one year's standing. The table shows that wages increase gradually with experience, nevertheless the progress of the "average" girl is slow after $8 has been attained. This is shown by the fact that in from 2 to 8 years' service, the wages received by the greatest number of workers in each series is $8. After 6 to 7 years' service, workers become more steady. More than half of the workers from 7 to 8 years' and from 8 to 9 years' service are receiving $9, and from 9 to 10 years', $10. In no experience series do more than half the workers receive over $13, and this is from 20 to 25 years. The wage received by the largest number of workers, advances in no series beyond $12.

TABLE NO. IV.

Wages of Women in Five Department Stores Grouped by Occupations.

Wages.	Occupations.												Totals.	
	Messengers.		Inspectors, wrappers and cashiers.		Tube cashiers.		Stock.		Saleswomen.		Clerical workers.			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
$2.50-$2.99, ...	140	48.3	....	....	....	....	....	....	.....	....	.....	....	140	1.8
$3.00-$3.49, ...	125	43.5	28	3.0	....	....	16	4.1	.....	....	108	5.8	277	3.6
$3.50-$3.99, ...	7	2.5	38	4.1	....	....	34	8.7	.....	....	76	4.1	155	2.0
$4.00-$4.49, ...	13	4.6	179	19.3	....	....	63	16.2	5	0.1	139	7.5	398	5.3
$4.50-$4.99, ...	3	1.1	112	12.1	....	....	47	12.1	10	0.2	56	3.0	228	3.8
$5.00-$5.49, ...	....	....	93	10.0	....	....	51	13.1	40	1.0	226	12.1	410	5.4
$5.50-$5.99, ...	....	....	44	4.7	....	....	14	3.6	16	0.4	42	2.3	116	1.5
$6.00-$6.49, ...	....	....	79	8.5	61	44.5	34	8.7	242	6.2	268	14.5	684	9.1
$6.50-$6.99, ...	....	....	20	2.2	9	6.6	1	0.3	31	0.8	26	1.4	87	1.1
$7.00-$7.49, ...	....	....	208	22.5	37	27.0	36	9.3	676	17.3	257	13.8	1,215	16.1
$7.50-$7,99, ...	....	....	8	0.8	1	0.7	1	0.3	59	1.5	21	1.1	90	1.2
$8.00-$8.49, ...	....	....	90	9.7	14	10.2	23	5.9	1,023	26.1	230	12.4	1,380	18.3
$8.50-$8.99, ...	....	....	5	0.5	....	....	4	1.0	88	2.2	9	0.5	106	1.4
$9.00-$9.49, ...	....	....	18	1.9	5	3.7	21	5.4	453	11.5	130	7.0	627	8.3
$9.50-$9.99, ...	....	....	1	0.1	....	....	...	....	67	1.7	4	0.2	72	0.9
$10.00-$10.99, ...	....	....	5	0.5	5	3.7	18	4.6	411	10.5	104	5.6	543	7.2
$11.00-$11.99, ...	....	....	1	0.1	1	0.7	6	1.5	211	5.4	54	2.9	273	3.6
$12.00-$12.99, ...	....	....	....	....	3	2.2	9	2.3	203	5.2	26	1.4	241	3.2
$13.00-$13.99, ...	....	....	....	....	1	0.7	5	1.3	113	2.9	16	0.9	135	1.8
$14.00-$14.99, ...	....	....	....	....	....	....	2	0.5	72	1.8	20	1.1	94	1.2
$15.00-$15.99, ...	....	....	....	....	....	....	1	0.3	91	2.3	30	1.6	122	1.6
$16.00-$16.99, ...	....	....	....	....	....	....	2	0.5	69	1.7	10	0.5	81	1.0
$18.00-$19.99, ...	....	....	....	....	....	....	1	0.3	23	0.6	2	0.1	26	0.3
$20.00-$24.99, ...	....	....	....	....	....	....	....	....	14	0.4	3	0.2	17	0.2
$25.00, ...	....	....	....	....	....	....	....	....	8	0.2	.....	....	8	0.1
Totals, ...	288	100	929	100	137	100	389	100	3,925	100	1,857	100	7,525	100

TABLE NO. V.

Store A.

Wages.	Occupations.					Totals.
	Messengers.	Inspectors, wrappers and cashiers.	Stock.	Saleswomen.	Clerical workers.	
	%	%	%	%	%	%
$2.50-$2.99,	.....	.....	.....	.....	.....	.....
$3.00-$3.49,	20.0	.....	3.5	.....	0.3	0.5
$3.50-$3.99,	25.0	.....	8.8	.....	0.7	0.8
$4.00-$4.49,	40.0	1.0	21.1	0.2	1.1	1.8
$4.50-$4.99,	15.0	3.6	23.1	0.6	3.9	2.9
$5.00-$5.49,	.....	2.8	12.3	0.8	3.5	2.1
$5.50-$5.99,	.....	.....	17.5	1.0	4.2	2.0
$6.00-$6.49,	.....	.....	3.5	0.7	5.6	1.6
$6.50-$6.99,	.....	.....	.....	0.6	1.1	0.5
$7.00-$7.49,	.....	60.5	3.5	0.6	11.3	13.6
$7.50-$7.99,	.....	0.4	.....	.....	2.1	0.5
$8.00-$8.49,	.....	26.0	1.7	35.2	14.8	28.2
$8.50-$8.99,	.....	0.7	.....	3.8	1.1	2.5
$9.00-$9.49,	.....	4.6	.....	7.0	15.1	7.4
$9.50-$9.99,	.....	.....	.....	3.8	.....	2.2
$10.00-$10.99,	.....	0.4	.....	13.4	6.0	9.0
$11.00-$11.99,	.....	.....	.....	7.7	12.0	6.7
$12.00-$12.99,	.....	.....	.....	9.2	2.1	5.8
$13.00-$13.99,	.....	.....	.....	3.3	3.9	2.7
$14.00-$14.99,	.....	.....	.....	3.4	3.2	2.5
$15.00-$15.99,	.....	.....	.....	2.5	6.7	2.8
$16.00 $17.99,	.....	.....	.....	3.7	1.0	2.4
$18.00-$19.00,	.....	.....	.....	1.1	0.3	0.7
$20.00-$24.99,	.....	.....	.....	0.8	.....	0.5
$25.00,	.....	.....	.....	0.6	.....	0.3
Totals,	100	100	100	100	100	100

TABLE NO. VI.

Store B.

Wages.	Occupations.					Totals.
	Messengers.	Inspectors, wrappers and cashiers.	Stock.	Saleswomen.	Clerical workers.	
	%	%	%	%	%	%
$2.50-$2.99,	.....	.....	.....	.....	.....	.....
$3.00-$3.49,	97.8	.....	2.2	.....	3.6	5.4
$3.50-$3.99,	.....	5.5	6.4	.....	2.3	1.6
$4.00-$4.49,	2.2	9.6	15.0	.....	3.4	2.9
$4.50-$4.99,	.....	16.7	10.7	.....	1.3	3.3
$5.00-$5.49,	.....	8.2	12.9	.....	20.6	6.4
$5.50-$5.99,	.....	11.3	2.2	.....	0.9	2.0
$6.00-$6.49,	.....	22.9	14.0	2.1	15.7	8.7
$6.50-$6.99,	.....	6.8	.....	0.4	1.3	1.5
$7.00-$7.49,	.....	9.9	8.6	22.0	14.5	16.7
$7.50-$7.99,	.....	2.0	.....	1.1	1.3	1.2
$8.00-$8.49,	.....	4.1	5.4	35.0	15.2	22.8
$8.50-$8.99,	.....	1.0	1.1	1.5	0.5	1.1
$9.00-$9.49,	.....	0.3	7.6	19.0	5.9	12.0
$9.50-$9.99,	.....	0.3	.....	1.0	0.2	0.6
$10.00-$10.99,	.....	1.4	7.6	6.7	7.2	5.8
$11.00-$11.99,	.....	.....	1.1	6.0	1.1	3.5
$12.00-$12.99,	.....	.....	3.0	0.4	0.2	0.4
$13.00-$13.99,	.....	.....	.....	2.5	0.7	1.7
$14.00-$14.99,	.....	.....	.....	0.5	1.1	0.5
$15.00-$15.99,	.....	.....	.....	0.6	1.6	0.7
$16.00-$17.99,	.....	.....	1.1	0.9	0.7	0.7
$18.00-$19.99,	.....	.....	1.1	0.1	.....	0.2
$20.00-$24.99,	.....	.....	.....	.....	0.7	0.2
$25.00,	.....	.....	.....	0.2	.....	0.1
Totals,	100	100	100	100	100	100

TABLE NO. VII.

Store C.

Wages.	Occupations.						Totals.
	Messengers.	Inspectors, wrappers and cashiers.	Tube cashiers.	Stock.	Saleswomen.	Clerical workers.	
	%	%	%	%	%	%	%
$2.50-$2.99,	19.3	.....	.....	.....	.....	.....	0.4
$3.00-$3.49,	80.7	18.1	.....	.....	.....	8.6	6.4
$3.50-$3.99,	.....	14.2	.....	6.1	.....	11.3	5.3
$4.00-$4.49,	.....	23.2	.....	14.3	.....	14.1	7.4
$4.50-$4.99,	.....	15.5	.....	18.4	.....	7.1	4.5
$5.00-$5.49,	.....	21.3	.....	16.4	2.5	13.3	8.2
$5.50-$5.99,	.....	3.2	.....	2.0	0.7	4.4	2.1
$6.00-$6.49,	.....	1.3	69.9	6.1	18.4	14.0	15.9
$6.50-$6.99,	.....	.....	.....	2.0	2.2	1.8	1.7
$7.00-$7.49,	.....	0.6	11.6	4.2	23.6	6.5	14.4
$7.50-$7.99,	.....	.....	2.3	.....	3.5	0.7	2.0
$8.00-$8.49,	.....	1.3	11.6	6.1	16.4	8.7	11.6
$8.50-$8.99,	.....	.....	.....	2.0	0.8	0.2	0.5
$9.00-$9.49,	.....	1.3	2.3	4.2	8.3	3.6	5.6
$9.50-$9.99,	.....	.....	.....	.....	0.5	.....	0.3
$10.00-$10.99,	.....	.....	.....	6.1	4.0	3.3	6.7
$11.00-$11.99,	.....	.....	2.3	2.0	2.5	1.8	1.9
$12.00-$12.99,	.....	.....	.....	6.1	3.9	0.4	2.3
$13.00-$13.99,	.....	.....	.....	.....	1.1	.....	0.5
$14.00-$14.99,	.....	.....	.....	2.0	0.9	.....	0.5
$15.00-$15.99,	.....	.....	.....	2.0	2.4	.....	1.1
$16.00-$17.99,	.....	.....	.....	.....	0.7	0.2	0.4
$18.00-$19.99,	.....	.....	.....	.....	0.4	.....	0.2
$20.00-$24.99,	.....	.....	.....	.....	0.2	.....	0.1
$25.00,	.....	.....	.....	.....	.....	.....	.....
Totals,	100	100	100	100	100	100	100

TABLE NO. VIII.

Store D.

Wages.	Occupations.						Totals.
	Messengers.	Inspectors, wrappers and cashiers.	Tube cashiers.	Stock.	Saleswomen.	Clerical workers.	
	%	%	%	%	%	%	%
$2.50-$2.99,	95.0	.....	.....	.....	.....	.....	6.9
$3.00-$3.49,	0.8	.....	.....	6.5	.....	7.2	2.3
$3.50-$3.99,	1.7	.....	.....	15.3	.....	2.4	1.9
$4.00-$4.49,	2.5	56.5	.....	15.3	0.4	7.2	2.5
$4.50-$4.99,	.....	15.7	.....	8.1	0.2	1.4	8.6
$5.00-$5.49,	.....	14.0	.....	9.7	1.2	9.7	5.6
$5.50-$5.99,	.....	2.5	.....	0.8	0.2	0.9	0.6
$6.00-$6.49,	.....	5.9	6.3	6.0	2.5	16.0	6.3
$6.50-$6.99,	.....	.....	.....	.....	0.4	0.9	0.4
$7.00-$7.49,	.....	4.6	50.0	12.1	19.3	19.6	16.6
$7.50-$7.99,	.....	.....	.....	0.8	2.5	0.2	1.3
$8.00-$8.49,	.....	1.3	12.5	7.3	16.0	14.4	12.6
$8.50-$8.99,	.....	.....	.....	0.8	3.5	0.2	1.9
$9.00-$9.49,	.....	.....	12.5	8.1	10.2	6.8	7.3
$9.50-$9.99,	.....	.....	.....	.....	2.5	.....	1.1
$10.00-$10.99,	.....	.....	15.6	4.9	11.0	6.9	7.7
$11.00-$11.99,	.....	0.6	.....	1.6	5.6	1.2	3.2
$12.00-$12.99,	.....	.....	3.1	.....	8.2	2.7	4.7
$13.00-$13.99,	.....	.....	.....	2.4	5.4	0.2	2.8
$14.00-$14.99,	.....	.....	.....	.....	2.5	1.2	1.4
$15.00-$15.99,	.....	.....	.....	.....	4.1	0.2	2.0
$16.00-$17.99,	.....	.....	.....	0.8	2.5	0.4	1.4
$18.00-$19.99,	.....	.....	.....	.....	1.1	0.2	0.5
$20.00-$24.99,	.....	.....	.....	.....	0.6	.....	0.3
$25.00,	.....	.....	.....	.....	0.1	.....	0.1
Totals,	100	100	100	100	100	100	100

TABLE NO. IX.

Store E.

Wages.	Occupations.						Totals.
	Messengers.	Inspectors, wrappers and cashiers.	Tube cashiers.	Stock.	Saleswomen.	Clerical workers.	
	%	%	%	%	%	%	%
$2.50-$2.99,	76.9	.....	.....	.....	.....	.....	2.2
$3.00-$3.49,	23.1	.....	.....	6.0	.....	8.2	3.4
$3.50-$3.99,	.....	.....	.....	1.6	.....	1.1	0.4
$4.00-$4.49,	.....	54.2	.....	16.6	.....	10.1	6.9
$4.50-$4.99,	.....	12.5	.....	3.0	0.7	0.3	1.3
$5.00-$5.49,	.....	14.6	.....	18.2	1.0	9.3	5.3
$5.50-$5.99,	.....	6.2	.....	.....	.....	0.7	0.5
$6.00-$6.49,	.....	2.1	46.8	13.6	13.2	20.3	16.6
$6.50-$6.99,	.....	.....	14.5	.....	0.7	1.9	1.8
$7.00-$7.49,	.....	2.1	25.9	13.6	25.7	20.0	20.9
$7.50-$7.99,	.....	2.1	.....	.....	0.7	1.9	1.0
$8.00-$8.49,	.....	2.1	8.0	7.6	20.2	8.2	13.7
$8.50-$8.99,	.....	.....	.....	1.6	0.7	0.7	0.6
$9.00-$9.49,	.....	4.1	.....	3.0	11.6	6.8	8.1
$9.50-$9.99,	.....	.....	.....	.....	.....	1.1	0.3
$10.00-$10.99,	.....	.....	.....	3.0	11.2	4.5	7.1
$11.00-$11.99,	.....	.....	.....	3.0	3.2	0.7	2.0
$12.00-$12.99,	.....	.....	3.2	4.6	4.9	2.2	3.7
$13.00-$13.99,	.....	.....	1.6	3.0	1.0	0.3	1.0
$14.00-$14.99,	.....	.....	.....	1.6	2.1	0.3	1.3
$15.00-$15.99,	.....	.....	.....	.....	3.1	1.1	1.8
$16.00-$17.99,	.....	.....	.....	.....	.....	0.3	0.1
$18.00-$19.99,	.....	.....	.....	.....	.....	.....	.....
$20.00-$24.99,	.....	.....	.....	.....	.....	.....	.....
$25.00,	.....	.....	.....	.....	.....	.....	.....
Totals,	100	100	100	100	100	100	100

TABLE NO. X.

Comparative Table of Wages Paid to all Woman in 5 Stores by Cumulative Per Cent.

Wages.	Store A.	Store B.	Store C.	Store D.	Store F.	Total.
Under $3.00,	.....	.....	0.4	6.9	2.2	1.8
Under $3.50,	0.5	5.4	6.8	9.2	5.6	5.4
Under $4.00,	1.3	7.0	12.1	11.1	6.0	7.4
Under $4.50,	3.1	9.9	19.5	13.6	12.9	12.7
Under $5.00,	6.0	13.2	24.0	22.2	14.2	16.5
Under $5.50,	8.1	19.6	32 2	27.8	19.5	21.9
Under $6.00,	10.1	21.6	34.3	28.4	20.0	23.4
Under $6.50,	11.7	30.3	50.2	34.7	36.6	32.5
Under $7.00,	12.2	31.8	51.9	35.1	38.4	33.6
Under $7.50,	25.8	48.5	66.3	51.7	59.3	49.7
Under $8.00,	26.3	49.7	68.3	53.0	60.3	50.9
Under $8.50,	54.5	72.5	79.9	65.6	74.0	69.2
Under $9.00,	57.0	73.6	80.4	67.5	74.6	70.6
Under $9.50,	64.4	85.6	86.0	74.8	82.7	78.9
Under $10.00,	66.6	86.2	86.3	75.9	83.0	79.8
Under $11.00,	75.6	92.0	93.0	83.6	90.1	87.0
Under $12.00,	82.3	95.5	94.9	86.8	92.1	90.6
Under $13.00,	88.1	95.9	97.2	91.5	95.8	93.8
Under $14.00,	90.8	97.6	97.7	94.3	96.8	95.6
Under $15.00,	93.3	98.1	98.2	95.7	98.1	96.8
Under $16.00,	96.1	98.8	99.3	97.7	99.9	98.4
Under $18.00,	98.5	99.5	99.7	99.1	100	99.4
Under $20.00,	99.2	99.7	99.9	99.6	.....	99.7
Under $25.00,	99.7	99.9	100	99.9	.....	99.9
Under $26.00,	100	100	.....	100	.....	100

TABLE NO. XI.

Wages of Employees in Four Stores Grouped by Ages.

Wages.	Ages. Under 16 years.	16-18 years.	18-21 years.	21 years and over.	Total. Nos.	Total. %
$2.50-2.99,	135	5	.....	.....	140	3.5
$3.00-$3.49,	81	21	.....	.....	102	2.5
$3.50-$3.99,	30	18	.....	.....	48	1.2
$4.00-$4.49,	30	88	102	2	222	5.5
$4.50-$4.99,	3	53	42	1	99	2.5
$5.00-$5.49,	5	61	106	12	184	4.6
$5.50-$5.99,	.....	14	33	1	48	1.2
$6.00-$6.49,	4	40	184	72	300	7.4
$6.50-$6.99,	1	2	19	10	32	0.8
$7.00-$7.49,	.....	10	199	445	654	16.2
$7.50-$7.99,	.....	.....	9	28	37	0.9
$8.00-$8.49,	.....	5	43	692	740	18.3
$8.50-$8.99,	.....	.....	7	66	73	1.8
$9.00-$9.49,	.....	1	10	269	280	7.0
$9.50-$9.99,	.....	.....	.....	55	55	1.4
$10.00-$10.99,	.....	.....	9	297	306	7.6
$11.00-$11.99,	.....	.....	.....	165	165	4.1
$12.00-$12.99,	.....	.....	1	184	185	4.6
$13.00-$13.99,	.....	.....	.....	90	90	2.2
$14.00-$14.99,	.....	.....	.....	70	70	1.7
$15.00-$15.99,	.....	.....	.....	87	87	2.2
$16.00-$17.99,	.....	.....	.....	66	66	1.6
$18.00-$19.99	.....	.....	.....	25	25	0.6
$20.00-$24.99,	.....	.....	.....	13	13	0.3
$25.00,	.....	.....	.....	14	14	0.3
Total Nos.,	289	318	764	2,664	4,035	100
Per cent.,	7.2*	7.7	19.0	66.1	100	.....

*This percentage is unduly high as the ages of all employees under 16 years were on record, whereas those in the higher age groups were not.

TABLE NO. XII.

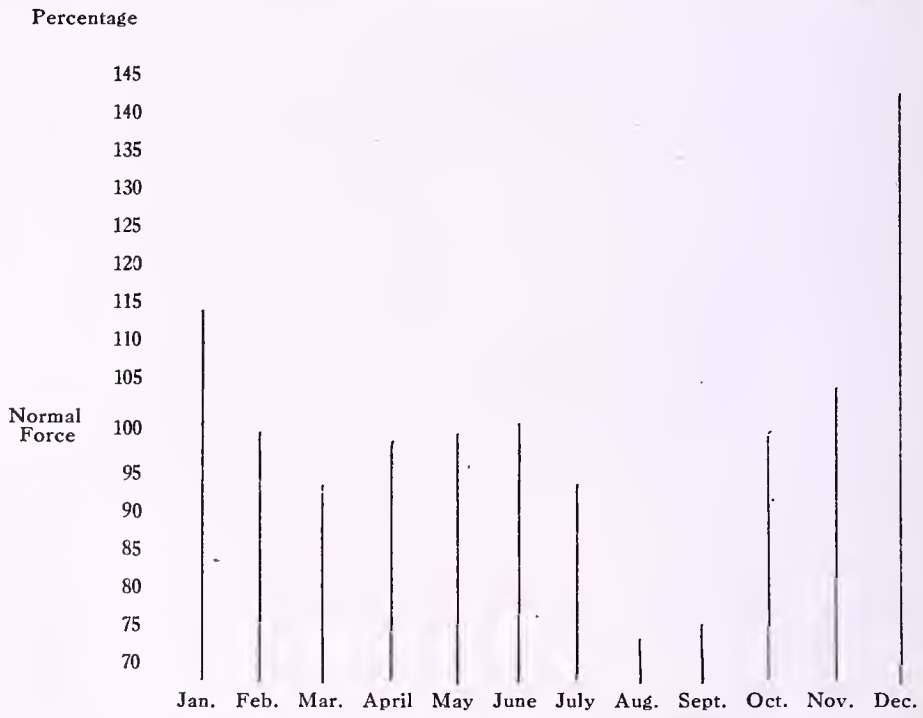
Wages of Employees in Four Stores Grouped by Length of Service with Present Employer.

Wages.	Length of Time Employed.														Total.	
	Under 1 year.	1-2 years.	2-3 years.	3-4 years.	4-5 years.	5-6 years.	6-7 years.	7-8 years.	8-9 years.	9-10 years.	10-15 years.	15-20 years.	20-25 years.	25 years and over.	Nos.	%
$2.50-$2.99,	134	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	140	2.8
$3.00-$3.49,	81	57	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	140	2.8
$3.50-$3.99,	58	42	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	104	2.1
$4.00-$4.49,	110	85	25	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	224	4.5
$4.50-$4.99,	49	60	22	1	1	.....	1	.....	.....	.....	.....	.....	.....	.....	134	2.7
$5.00-$5.49,	97	73	23	22	3	1	2	1	.....	.....	.....	.....	.....	.....	222	4.5
$5.50-$5.99,	20	19	16	10	3	2	.....	.....	.....	.....	.....	.....	.....	.....	70	1.4
$6.00-$6.49,	200	104	52	39	14	9	10	1	2	2	1	.....	.....	.....	434	8.8
$6.50-$6.99,	11	8	13	8	7	2	1	1	.....	.....	1	.....	.....	.....	52	1.1
$7.00-$7.49,	223	194	104	85	45	41	24	15	21	15	13	.....	.....	.....	780	15.7
$7.50-$7.99,	20	5	8	14	3	4	.....	6	4	.....	1	.....	.....	.....	65	1.3
$8.00-$8.49,	150	171	107	111	71	77	30	46	28	16	49	4	3	.....	863	17.4
$8.50-$8.99,	8	6	17	11	9	4	8	6	4	4	5	.....	.....	1	83	1.7
$9.00-$9.49,	48	26	35	37	25	34	15	28	24	18	46	11	4	7	358	7.2
$9.50-$9.99,	5	1	4	7	13	4	5	5	3	.....	7	2	2	2	60	1.2
$10.00-$10.99,	62	34	32	28	27	32	21	20	19	23	62	19	6	12	397	8.0
$11.00-$11.99,	5	6	20	18	10	6	9	10	15	12	31	23	16	11	192	3.9
$12.00-$12.99,	28	9	23	16	21	15	8	18	12	4	36	16	5	15	226	4.6
$13.00-$13.99,	2	4	5	7	10	4	3	7	9	14	20	6	7	6	104	2.1
$14.00-$14.99,	3	2	2	2	1	4	3	9	2	2	22	11	6	10	79	1.6
$15.00-$15.99,	5	8	3	5	3	5	3	4	3	7	30	16	10	6	108	2.2
$16.00-$17.99,	4	3	2	1	1	.....	2	3	4	4	10	15	9	8	66	1.3
$18.00-$19.99,	.....	1	1	2	.....	1	.....	1	1	.....	6	4	3	5	25	0.5
$20-00-$24.99,	.....	.....	1	1	2	.....	1	.....	.....	1	1	4	1	1	13	0.3
$25.00,	.....	.....	1	.....	.....	1	.....	1	2	1	2	3	2	1	14	0.3
Total Nos.,	1,323	924	521	428	269	247	146	182	153	123	343	134	74	85	4,953	100
Per cent.,	26.7	18.7	10.5	8.7	5.4	5.0	3.0	3.7	3.0	2.5	6.9	2.7	1.5	1.7	100	.....

Regularity of Employment.

The following chart, showing the variation from the normal in the number of employees in one large department store, at different seasons, shows a condition which is probably true of the four other large stores. The month of May when this store considered its force at about normal, has been taken as 100%.

PERCENTAGE FLUCTUATION BY MONTHS IN THE WORKING FORCE OF ONE STORE.



The month of December shows a 42% increase in the normal force and August a 27% decrease. This indicates plainly the number of temporary and intermittent department store workers at the command of any large store for busy seasons. Many girls work in the stores from September until Christmas eve or until January first, when a falling off of trade demands a cutting down of forces. Hundreds of employees are dismissed Christmas eve in every large store. A few of these workers will be re-engaged December 27th or 28th and kept through the January sales. A toy department that has normally 12 women, had 350 just before Christmas. About three hundred are dismissed December 24th and the others are gradually dropped during the next month until reduction sales and stock inventory are over. In March or April again extra workers will be taken on for two or three months. From previous years' experience these changes can be anticipated by the management and, as far as possible, notices

of dismissal should be given employes in advance. This is not the custom as most of the stores have applicants for positions sign slips agreeing that the firm may dismiss them any moment with pay to the time of leaving. It is needless to observe that this intermittent employment makes progress in salesmanship for this class of workers impossible.

Upon the examination of the records of 456 saleswomen in one store for a period of 16 weeks from June to September, it was found that many saleswomen take some voluntary vacation beyond the paid week. The better paid women are out from one to nine weeks. The group considered had all been in the employ of the house at least one year and they averaged 7½ days' absence beyond their paid vacation in this summer season alone. Of those who were earning $8 and above, the largest proportion, or 55%, were out one week and more beyond the paid week, as against only 40% of those earning under $8. In one department store regular saleswomen and six-day contingent sellers are given only three days' work a week in slack seasons.

Wages of Contingents.

Contingent workers have already been dealt with at some length in Chapter I. They fall into two classes—those who work a full 49½ hour week and those who are engaged for only two or three days or parts of days and are called as the case may be, half or three-quarter time workers. Such extra help receive from $3 to $6 a week depending on the hours they work and the amount of their experience. Three-day or half-time contingents receive their wages on the regular pay day.

The following table shows the wages of the registered contingents of four department stores grouped by the amount of time for which they are engaged weekly. All are saleswomen except 36, who are inspectors and cashiers. The material for this table is taken from pay roll data.

TABLE NO. XIII.

Wages of Contingents in Four Stores

Amonnt of Time Worked Each Week.	$2.50-$2.99.	$3.00-$3.49.	$3.50-$3.99.	$4.00-$4.49.	$4.50-$4.99.	$5.00-$5.49.	$6.00-$6.49.	$6.50-$6.99.	$7.00-$7.49.	$7.50-$7.99.	$8.00-$8.49.	$9.00-$9.49.	$10.00-$10.99.	$11.00-$11.99.	$12.00-$12.99.	Totals.
Two days, ..	16	69	35	10	....	....	....	....	....	....	....	....	....	....	....	130
Half time, ..	....	7	5	13	5	27	5	....	....	....	....	....	....	....	....	65
Three-quarter time, ...	....	....	....	....	....	26	....	....	2	3	....	1	....	....	....	32
Full time, ..	....	....	....	....	....	....	10	4	44	1	85	13	6	2	3	168
Totals, ..	16	76	40	23	5	53	15	4	46	4	85	14	6	2	3	392

Note—Two days is equivalent to two three-quarter days or two whole days. Half time is equivalent to six half days or three whole days. Three-quarter time is equivalent to six three-quarter days. Full time is equivalent to six whole days.

By far the largest majority of extra saleswomen, or those who work at special seasons only receive $1 a day. Some receive only 75 cents. More experienced women receive $1.50 to $2.50. One department store engages cash girls at 50 cents a day. Unlike the contingents, these workers by the day are paid off each evening after store hours.

Wages of Saleswomen in Neighborhood Stores.

The rates of pay for women in the neighborhood stores can be compared with each other but not with the down-town stores. Conditions are somewhat different where a girl lives close to her work and has no car fare. She is thus able to go home for lunch. The form of dress is not prescribed, although most of the girls wear dark dresses or white blouses. Mistakes on the part of saleswomen are more easily rectified in these small stores and fines seldom occur except for lateness. A few minutes lateness is readily excused, girls usually making up the time lost during the week. In one store where a system of fining was imposed, the money thus raised went into the beneficial society—the only one among neighborhood stores. In another store where lateness was regularly deducted from the wages, the total lateness of each employee was kept for one year and at the end of that time the four girls having the least number of hours against them were given extra paid vacations ranging from one week to ten days.

Commissions to saleswomen are paid in one department store in South Street, where 1 to 2½% is given in some departments to induce the girls to sell the higher priced articles. As high as 10% is allowed on premiums. There is a tendency here to abuse this form of commission when the crafty sales person almost compels the foreign shopper to take goods on which there is a premium in preference to what she intended to buy. In one store in Germantown, commissions of 1% are paid to experienced saleswomen. A large department store on Germantown Avenue has a profit sharing plan for its older employees.

Opportunity was given to consult the pay roll of three outlying department stores. One of these is unique in paying an extra 50 or 75 cents to the regular saleswomen for work on Friday night if they choose to stay, thereby completing the 54-hour week. The following table of wages includes flat rate payments only without deductions for fines or time out and without consideration of this extra payment.

TABLE NO. XIV.

Wages of Saleswomen in Three Neighborhood Department Stores.

Wage.	$4.50.	$5.00.	$5.50.	$6.00.	$6.50.	$7.00.	$7.50.	$8.00.	$9.00.	$9.50.	$10.00.	$11.00.	$12.00.	$14.00.	$15.00.	Total.
No.,.	1	13	3	16	7	14	7	4	4	3	7	2	6	2	3	92

This table shows 61 saleswomen, 63.3% of whom are receiving less than $8 and 33, or 35.8%, $6 and under. The greatest number of employees are receiving $6. Two stores pay $5 to girls who have been working less than one year. The wages of these stores are not representative of all stores in the same neighborhood. With the exception of shoe stores, which require experienced sellers, the small stores pay a maximum of about $6 and even some neighborhood department stores do not pay beyond this amount.

In the outlying shopping districts contingent workers are engaged for evening and Saturday afternoon work. The smaller stores pay evening helpers 50 and 75 cents, and 75 cents and $1 for afternoon and evening. Some department stores require experienced saleswomen in the evening when trade is best, and pay a few "contingents" as high as $1.50 and $2. The stores have no difficulty in securing these workers. A sign GIRLS WANTED in the window never fails to bring sufficient applicants.

Wages of Saleswomen in Five and Ten Cent Stores.

In visiting the five and ten cent stores, each manager was closely questioned as to the minimum and the maximum wage and that paid the majority of his workers. The following table represents the results of statements for 18 circuit stores. No clerical workers are included.

TABLE NO. XV.

Minimum, Maximum and Majority Wage Paid in 18 Five and Ten Cent Stores. (Managers' Statements.)

	$4.00	$4.50	$5.00	$5.25	$5.50	$5.75	$6.00	$6.50	$7.00	$7.50	$8.00	$9.00
Min., ...	2	3	10	.....	3	.....	.....	.....	.....	.....	.....	.....
Maj., ...	.....	.....	5	1	7	.....	4	.....	1	.....	.....	.....
Max., ...	.....	.....	1	.....	2	1	2	5	3	2	1	1

It will be seen that in the majority of stores $5 is the usual minimum wage and $6.50 the maximum, and that the wages received by the greatest number of girls in the different stores ranged from $5 to $5.50.

In seven of the above stores, access was had to the wage books. One pay roll, which was for one of the largest stores, was merely read through for verification of the statements already made by the manager. From the other six, the rate paid each girl was copied. Sixty-eight employees are represented, or somewhat over 15 per cent. of the entire number of women employed by all the five and ten cent stores in the city.

TABLE XVI.

Wages of Women in 6 Five and Ten Cent Stores. (Pay Roll Data.)

	$4.50.	$4.75.	$5.00.	$5.25.	$5.50.	$5.75.	$6.00.	$6.50.	$7.00.	$7.50.	$8.00.	†$9.00.	$10.00.	Total.
Office,	....	....	....	....	....	....	....	1	1	1	1	1	1	68
Sales,	3	2	8	6	27	1	5	9	....	1	....	....	....	
Percentage,	4.4	2.9	11.8	8.8	39.6	1.5	7.4	14.7	1.5	2.9	1.5	1.5	1.5	100

The table covers stores from six different outlying shopping centres. Comparison with the preceeding table shows it to be fairly indicative of the general situation. According to this estimate, 69 per cent. of saleswomen in the five and ten cent stores are receiving under $6 and 91 per cent. under $7. In one store employing 18 women, 3 were getting over $5 and only one as much as $6.50. For evening work these stores pay usually 50 cents, in one case as low as 35 cents; and for afternoons and evenings, 75 cents.

In the central part of the city a minimum wage of $5 is paid, but in perhaps not more than two stores is the range of wages higher than the above table indicates. One manager, whose pay roll was seen but not copied for this study, has found it profitable to keep only "girls of the department store type" and to advance their wages. As he expressed it, "Two good girls at $7.50 are worth more to the store than three mediocre ones at $5". His pay roll shows higher wages than are usual; saleswomen receiving $8, $9 and even $10, and yet he finds these methods sound business, claiming that profits increase in spite of competition.

Saleswomen in the five and ten cent stores live almost exclusively with their families. Many managers make this a requirement of employment, a few declaring frankly that girls cannot otherwise support themselves on their wages. Some were of the opinion that girls without social moorings are less dependable. Most five and ten cent store girls like the comparative freedom from rules and restraint. Fines for lateness are seldom imposed as the supply of girls is always sufficient except at Christmas time and managers prefer to replace habitual latecomers by new employees. Fines for breakage are more frequent but are usually imposed only in case of carelessness.

That girls do not, generally speaking, remain long in the five and ten cent stores is evident from data gathered from each manager as to the age of his employees. From a count made it is estimated that 13 per cent. of all five and ten cent store girls are from 16 to 18 years of age, 63 per cent. from 18 to 21 years, and 24 per cent., 21 years and over. About 25 years is the maximum age. In February, 1914, one store employing 13 girls, had only two who had been there one year. Various systems have been devised by the central executive offices or by local managers to make their stores attractive to girls. At the end of one year's service previous to June first, girls are given one week's vacation with, in some cases half, in most cases full pay and for two years, two weeks with full pay. One syndicate allows a full week's pay only at the end of two years' service. A gift of $5 is given at Christmas time for every previous year of service, up to five years or $25. In one chain, $15, in another $20 is the maximum paid. One snydicate allows $5 when girls marry. The same syndicate fixes a minimum wage of $1 a day for the month of December. There is however less incentive for the girls to remain in the five and ten cent store than in the department store, where possibilities of an advanced position are before them. Bright girls sometimes take up the clerical work of the store, but without outside training they cannot progress far. The encouragement which these stores hold out to men, for this work, is entirely lacking where the women are concerned; and unless promise of increased possibilities is held out to them, the entrance of ambitious young women into clerical work cannot be encouraged.

IV. WORKING GIRLS' BUDGETS.

Method and Scope of Study.

Facts about the income and outgo of working-girls in Philadelphia were obtained through an investigation which extended from March, 1913, to March, 1914. Two methods of procuring data were decided upon—the budget method and the account book system.* To obtain a budget estimate the investigator goes over with the girl her usual items of expenditure, and on the basis of these statements computes the outgo for the year. The advantage of this method is that with the girl's aid and helpful suggestion an approximate figure can be secured for the disbursements for clothing and other necessities which are made at different intervals and which vary from time to time. When

(*) For facsimiles of pages, see Appendix.

the account book is used, the girl makes out and keeps in a book prepared with full headings for customary expenses a record of her daily outlay for the period studied. These expenditures are totalled and reduced to weekly averages. The advantage of this method is the exactness of the resulting figures.

By means of the budget inquiry, schedules from 788 girls were received. This data was grouped for classification under three main heads: (1) general family history and related facts, (2) expenditures for food and rent, and (3) miscellaneous expenditures. The use of the average was employed in the treatment of the schedule budgets.

No apparent attempt at giving misleading reports was found, and expenditures for food, shelter, heat, light, car fare and laundry are reliable and exact. The sundry items (amusement, health, savings, etc.) were variable and would not admit of verification. The clothing statements are actual, however, being taken down in many instances by the investigator herself from department stores orders, claim slips of transfers and memoranda, the latter being often only a line, such as "Blue silk waist—net—$1.98."

The records obtained by the account book system included in this survey covered a period of twelve months. Those reports which were not fully itemized or which covered too short a period to be typical, and those which showed obvious mistakes were rejected. Statements from 102 women employed in department store work were considered. As only complete records were used, it was necessary to discard all but 22 of the books. The intensive or type-study method was adopted for part of this number. Six cases were chosen and studied in detail because the information contained in them was sufficiently uniform to indicate typical rather than extraordinary conditions.

Cost of Food and Shelter.

The data in this and the following sections on cost of clothing and other necessaries, comforts and pleasures, has all been secured through the schedule budgets.

The first consideration in a study of the cost of living is the proportion of women living at home and "adrift." The term "adrift" will be used throughout this report to designate women wage earners as follows: Married women who support a family, single women or widows who are at the head of a household, women living in boarding or lodging houses, as well as those who are self-supporting and living in private families other than their own.

The classification of women into these groups was particularly difficult. The data leading to the classification was secured by three methods, namely: (1) personal visits to girls employed in the stores, gathering information as to their living conditions exclusively, (2)

canvassing of various wards in the city, and (3) study of the records on living conditions of one large store. The number of women at home and adrift is as follows:

	No.	Per Cent.
At home,	502	63.7
Adrift,	286	36.3
Total,	788	100.0

It is apparent from these figures that over one-third of the saleswomen employed in Philadelphia shops are self-supporting and without homes except of their own making. Further, if these findings apply generally, there are in the city approximately 4,213* women in the trade who are "adrift."

It must always be kept in mind that it was not possible to secure statements on all points from the entire number of women questioned. This accounts for the varying numbers reporting in the different tables throughout the investigation.

As to the age and experience of women found in the two groups, material was limited to one store only, having 1,300 women employees. In this particular establishment, the average age and amount of experience were as follows:

TABLE NO. XVII.

Women from whom information was obtained.	Number adrift.	Number at home.	Average age (years) adrift.	Average age (years) at home.	Experience (years) adrift.	Experience (years) at home.
290	125	165	28.8	20.7	4.6	1.7

These percentages are in all likelihood too small to be representative of the city as a whole, yet it is interesting to note that the age difference between the groups is 8.1 years and the experience difference is 2.9 years.

(*) Based on the proportion of the 1910 Federal Census.

A consideration of the earnings of the adrift and at home groups and the expenditures for food and shelter incurred weekly, allowed the following summary of the data to be made:

TABLE NO. XVIII.

No. reporting.	Average weekly earnings adrift.	Average weekly earnings at home.	Average weekly spent for food and shelter adrift.	Average weekly spent for food and shelter at home.
467	$8.05	$7.91	$4.40	$4.02(*)

A scrutiny of this table shows that the weekly earnings of the adrift group averaged $8.05; 96 women received wages in excess of $8.05 and 106 received less. Of the "at home" group, 64 women were paid more than $7.91 and 122, less. The highest weekly wage taken in either group was that of a saleswoman in the hat department of one of the large stores, whose salary was $15 per week. The lowest wage used was $3 earned by a cash girl of 14 years.† In spite of the increased years of experience of the adrift group, the small increase in their average earnings may be explained by the fact that once the $8 wage is attained, progress for the majority of workers is slow. (Cf page 57).

Of "adrift" women, the highest board paid was $8; the lowest $3.25, and the average $4.40. In the "at home" group $5 was the highest amount paid for food and shelter, $2.50, the lowest and $4.02 the average. The difference between the board paid at home and adrift is 38c. The privileges of boarding at home are clear, however, since the freedom of life is extended and the mutual prosperity enjoyed by the family as a unit often lightens care.

Of the "adrift" group, 58 or 32 per cent., besides paying their own board, supported from one to five children or contributed to needy relatives in amounts varying from 10 cents to $1.25 weekly ($5 to $52.50 a year); 123 or 68 per cent. did not support any member of the family or even donate in small sums to relatives.

(*) This average was sustained by the combination of sixteen account books of saleswomen living at home.

(†) Salaried women, such as buyers for departments and advertisers have not been included in any part of this report because their high wage level would distort the ordinary income average.

The number of saleswomen adrift who gave information about contributions to their family is as follows:

TABLE NO. XIX.

	No. reporting.	No. contributing part of their earnings to family.	No. not contributing to family.
No.,	181	58	123
Per cent.,	100	32	68

Of the "at home" group, 52 or 28.7 per cent. of the girls turned in their entire earnings to the family budget, receiving in return food, shelter, clothing, etc.; 116 or 64 per cent., besides paying a specified sum for board, contributed to their family in amounts varying from 25 cents to $3 weekly, and 13 or 7.2 per cent. worked for "pin money" only.

The number of saleswomen living at home who gave information about contributions to their family is as follows:

TABLE NO. XX.

	No. reporting.	No. contributing all of their earnings to family.	No. contributing part of their earnings to family.	Average weekly amount contributed to family beyond the payment of board.	No. not contributing.
No.,	181	52	116	$1.73	13
Per cent.,	100	28.7	64.1	.....	7.2

The following table shows the cost of food and shelter for 286 women adrift who were living in various ways.

TABLE NO. XXI.

Comparative Cost of Different Modes of Living Scheduled from the Budgets of 286 Women Adrift.

Modes of Living.	No.	Per cent.	Average weekly earnings.	Average weekly cost for food and shelter.
Boarding and lodging,	123	43.0	$9.72	$5.23
Private families,	89	31.1	7.43	4.95
Keeping house,	70	24.5	7.87	3.62(*)
Organized boarding homes,	4	1.4	7.17	3.79
Totals and averages,	286	100	$8.05(†)	$4.40(‡)

In looking at this table, five essential points are revealed: First, that the average amount spent for food and shelter of women in the boarding and lodging group is higher than any other; second, that the largest per cent. of women adrift live in this group; third, that keeping house is the cheapest form of existence; fourth, that the lowest paid girls live in the organized boarding homes; and fifth, that the cost of living in organized boarding homes exceeds that of keeping house.

Cost of Clothing.

A practical study of clothing worn for work in the stores brought out the fact that if a girl wears a black uniform in the store for the whole year, she either wears a better grade of clothes to the store than on Sunday, or that perhaps the work-a-day raiment comprises the main part of her wardrobe. To find the cost of clothing required for this particular kind of work, the clothing accounts from the budgets of 24 salesgirls who were able to furnish complete items for one year were developed. From these accounts, it was found that the amounts spent for store clothing alone averaged $11.02 yearly.

(*) In making out this average the cost of food and shelter of the girl herself was estimated, without those dependent upon her.

(†) This average is obtained by finding total weekly earnings of all the girls and dividing by the number of girls.

(‡) This average is obtained by finding the cost of food and shelter of all girls and dividing by the number of girls.

Five instances indicating the varying articles of clothing needed for the store are here given.

No. 1. Inspectress.

3 white waists,	$2 38
2 black waists,	2 50
1 black skirt,	3 75
Total,	$8.63

No. 2. Stock Girl.

3 white waists,	$2 00
1 black skirt,	1 95
1 black dress,	2 75
1 apron,	50
Total,	$7 20

No. 3. Salesgirl.

1 dress,	$8 00
3 summer waists,	2 96
2 neck pieces,	50
2 aprons,	50
Total,	$11 96

No. 4. Salesgirl.

1 dress,	$6 00
1 skirt,	4 00
2 winter waists,	2 00
1 pr. undersleeves,	35
Total,	$12 35

No. 5. Salesgirl in a French Department.

1 black suit,	$18 00
2 silk waists,	8 18
3 summer waists,	4 50
Total,	$30 68

The greatest expense discovered was not so much in the value of the clothes, as was first suspected, but in the additional laundry from April to November, which increases the weekly average for this item by thirty cents for one-half the year.

The general clothing budgets demonstrated that although the clothing of a sales girl may be attractive because of her individual taste and handiwork with the needle, yet if expenses at any time are too much for her to meet, that important item—her wardrobe—suffers

greatly. Examples of old clothes being turned inside out, sponged, pressed, dyed and remodeled at home until threadbare, were numberless. Often too, no report was made because nothing had been bought that year. The following statements from two sensible salesgirls were taken as typical. One said, "Did not get any new clothes all winter; used last winter's clothes." Another remarked, "I buy a suit every other year maybe, or a dress in the year between and a summer dress once in a while."

In all groups, the modest outlay for clothing dispels the common notion that the working girl spends her "all" for fine feathers. Reports from 338 department store girls as to their outlay on clothes for one year allows a most convincing table to be made.

TABLE NO. XXII.

Amount Spent on Clothing for One Year.

No. reporting.	$20 and under.	$20 to $30.	$30 to $40.	$40 to $50.	$50 to $60.	$60 to $70.	$70 to $80.	$80 to $90.	$90 to $100.	$100 to $120.	$120 and upwards.	
No., ...	388	48	35	47	23	32	21	47	16	10	46	13
Per cent., ...	100	14	10	14	7	9	6	14	5	3	14	4

This table shows that the outlays for clothing mass at four distinct points, viz: $20 and under, between $30 and $40, between $70 and $80 and between $100 and $120. In order to know more definitely what was bought in these four radically different apportionments, four typical budgets are given as follows:

OUTLAY A—$20 AND UNDER.

Example I. The Wage of this Saleswoman is $6.00.

1 blue coat—R. M.,*	$4 98
1 black skirt,*	2 00
1 blue suit,*	7 00
2 white waists,*	1 96
1 plush hat,*	1 00
1 black shirt waist,*	50
1 linen skirt,*	1 00
1 pr. shoes, ...	1 25
1 pr. corsets, ...	50
Total, ...	$20 19

* Ready-made.

OUTLAY B—BETWEEN $30 AND $40.

Example 2. The Wage of this Saleswoman is $7.00.

1 blue coat,*	$10 00
1 serge dress—H. M.,†	7 00
1 silk hat,*	3 00
2 white waists,†	92
1 silk waist,*	1 98
1 pr. shoes,	5 00
1 pr. gloves,	1 50
1 lace collar,	25
1 lace bow,	25
1 pr. corsets,	1 50
Underwear,*	8 00
Total,	$39 40

OUTLAY C—BETWEEN $70 AND $80.

Example 3. The Wage of this Saleswoman is $9.

1 serge suit,*	$22 00
1 rain coat,*	6 00
1 silk dress,*	11 00
1 rajah dress,‡	5 00
4 gingham dresses,‡	9 00
1 silk waist,*	1 98
2 white waists,*	2 00
1 straw hat,	4 50
1 felt hat,	2 50
3 prs. shoes, $2, $2.50, $1.25,	5 75
1 pr. gloves,	1 00
3 collars, 25c., 39c., 25c.,	89
2 prs. stockings,	50
2 corset covers,	50
3 short skirts,†	25
2 prs. corsets,	2 00
2 underskirts, 59c., 69c.,	1 28
1 night gown,	1 98
Total,	$78 13

*Ready-made.
† Home-made.
‡ Made by seamstress.

OUTLAY D—BETWEEN $100 AND $120.

Example 4. The Wage of this Saleswomen is $15.

1 silk suit,*	$12 75
1 serge suit—tailored,	24 86
1 white dress,	7 69
1 satin dress,	8 00
Making and findings,	6 85
Material for 2 dresses,	5 81
Trimming, pattern and findings for 2 dresses,	3 53
Making of 2 dresses,	5 00
1 guimpe,	50
2 prs. shields,	38
2 white waists,*	3 00
1 voile waist,*	1 00
1 velvet hat,	5 00
1 chip hat,	6 25
1 silk skirt,*	2 00
2 prs. shoes, $5, $3.50,	8 50
1 pr. slippers,	1 50
1 pr. silk stockings,	1 00
2 prs. stockings,	56
3 prs. gloves,	1 75
1 pr. corsets,	1 50
4 undervests,	1 00
Muslin underwear,*	2 70
Incidentals, hair pins, handkerchiefs, etc.,	3 87
Total,	$115 00

Other Necessaries, Comforts and Pleasures.

Laundry.

The amount spent for laundry among those living at home and those living adrift was found to be equal. A table on girls' laundry derived from the budget-schedules, shows the following:

TABLE NO. XXIII.

Women from Whom Information was Secured.	Per Cent. Doing Their Own Laundry.	Per Cent. Paying for Laundry.	Average Weekly Cost of Laundry.
133	38	62	$0.65

It was demonstrated throughout the progress of this investigation that the care of health is a luxury item available only to the higher paid wage earners. Such an item of expenditure is not noticeable in the majority of the schedules. Up to the $8 wage group of those adrift

*Ready-made.

or at home, the girls patronize free dispensaries and the store doctor. Where the establishment employs a dentist, it is found that most of the girls have their teeth attended to once a year or once in two years; otherwise once in four years. A young woman receiving $8 a week incidentally remarked that she has a $35 dentist bill to pay for the year, due to the fact that she has been obliged to neglect her teeth for years because she could not afford the extra expense. In the store where she has always worked, the wages are low and the services of a dentist are not deemed necessary in the welfare department. Similar neglect of eyes is to be found in a dozen cases because of the cost of treatment. For example, Mrs. H., working in the book department of one of the large stores, consulted an optician instead of an oculist. When finally she was obliged to ask the store physician to prescribe for blinding headaches, he told her that she must rest in a dark room for at least three weeks, as her eyes had been badly strained and probably injured by the use of strong lenses.

Car Fare.

In the course of this investigation, it was ascertained that 95.2 per cent. of the great mass of saleswomen pay car fare to and from work, and that the average weekly amount spent on car fare by girls living in the city is 60 cents. Those living in suburban Pennsylvania and New Jersey towns average $1.68 weekly. The proportion paying this amount is 6 per cent. of the total per cent. paying car fare.

TABLE NO. XXIV.

Women from Whom Information was Secured.	Per Cent. Paying Car Fare.	Per Cent. Not Paying Car Fare.	Average Weekly Amount Spent for Car Fare.
229	95.2	4.8	$0.60

Recreation.

In the various groups heretofore mentioned, the amusement expenditures amounted to about the same, averaging 17 cents per week. In general the recreation reported was of a trivial, yet safe and wholesome nature. What most of the women did for relaxation can be best illustrated by their own replies, written on the schedules, as "We do not have much amusement, because on $8 one has a hard time to just make ends meet." Some of the younger girls wrote, "I go to the Palace on Saturdays to dance, and call on friends on Sunday;" "I do not have any fun except in my own house, because I can not possibly afford it;" "Am merely existing on my wage—$8—can't get along" was a pathetic plea expressed by a girl of 18 years. Another was, "I am in destitute circumstances and never have any spending

money," (wage $7). This pictures truly the hard struggle some must endure. The parents of this girl live in Russia; she is utterly alone in the city and is trying from time to time to send five cents or a quarter a week back to her native land. The older women interviewed said, "I sew for the children and go to bed," or "I have the use of the Free Library—a real pleasure." The most popular form of amusement undoubtedly was going to the "movies" and cheap vaudeville houses. This was indulged in by every group of girls.

TABLE NO. XXV.

No. Reporting.	Per Cent. Reporting Recreation.	Per Cent. Reporting no Recreation.	Average Weekly Amount Spent for Recreation.
181.	16.5	83.5	$0.17

The large per cent. reporting no amusement is not proof that the girls go without entertainment of any description. One of two account books with interesting notes at the end states, "I walk home and eat a cream puff;" the other says, "My gentleman friend is my only pleasure; we go walking nights." The investigator found on subsequent visits to these two young girls that the first one walked home from work at night quite often or saved five cents from her lunch money in order to buy this cream puff which to her was better than candy. The second girl depended on pleasures which other people gave her. (Nine per cent. of 181 women had savings and insurance).

Reducing Expenses and Supplementing Earnings.

The most prevalent way of reducing expenses found in the different groups was by doing their own laundry, sewing and millinery; 24 per cent. of 143 girls made their own clothes. Only six girls were found eating two meals a day, although twenty-nine reported that they did not have enough money to buy more than a five cent lunch.* The means by which girls in every group increase their income are indicated by the following instances: A widow with one child and an aged mother, sells ice cream on Saturday evenings from 6 P. M. to 1 A. M. and all day Sunday. By doing this she has been able to add $2 weekly to her earnings. Another woman works in a ten cent store for 50 cents a night twice a week. She has earned $12 in four months in that way. A third does sewing in the evening for friends. She also has a man boarder who pays $5 a week, for one meal and a room.

(*) In some of the large stores a wholesome lunch is prepared and sold to the girls for 9 and 10 cents. In one store, the investigator found that the lunch consists of a plate of beans, a dish of prunes, a cup of coffee, bread and butter and a tablespoon of mashed potatoes. Many of the girls in this store bought only one article of food for their lunch such as a dish of rice, or a piece of cake, costing 3 or 5 cents.

One girl plays nightly in the "movies" or sometimes at concerts in churches. Others reported tinting post cards, running ribbons in underwear, scrubbing and filling in as waitresses.

Living Conditions.

Without some knowledge of the manner in which the workers in the different groups live, the schedule investigation would be lacking in significance. The information secured through visits, while not affording complete records, nevertheless gave significant data at first hand living conditions. This information proves that the largest number of girls do not live in the vicinity of the shops and that the neighborhoods in which their homes are principally located or where the girls board or lodge, are grouped into three well defined districts in the city—the west, the north and the south—represented generally by the fifth, eighteenth, fifteenth, thirty-sixth and the forty-fourth wards. These neighborhoods were canvassed, housekeepers and girls were interviewed and the girls' rooms inspected. Information on the living conditions of 200 girls was thus secured. A summary of the way these girls lived is as follows:

40 live in 10 homes.
35 live in 10 private family homes.
67 live in 10 boarding houses.
58 live in 20 lodging houses.

200

In the boarding and lodging houses visited, only three out of the thirty had a parlor which the girls could use.

The best way to present the data secured by personal visits to girls is to describe a number of girls whose living conditions are typical. Each of the following five girls represents one of the above ways of living.

Case I. In a house on South Bancroft street lives Mazie W. and her mother, both saleswomen. They live with Mazie's grandmother, who rents the house. There are eight rooms in the house and seven people. With her in addition to Mazie and her mother, live two sons, her grand-daughter aged 16, and Mazie's young brother aged 7. The mother receives a wage of $6 a week, and ½ per cent. commission on all sales; Mazie gets $5 a week. They pay to the grandmother $2 per week each for rent and board. The bill for clothing in 1913 was $20 for Mazie, $20 for the mother and $7 for the boy. The home is scrupulously clean and the furniture bought on the installment plan cost $134.

Case II. Another salesgirl, with two room mates, lives in a large room on Girard avenue; the rent for this is $4 a week. Madeline's

room is typical. Old clothes are thrown over the arm of the gas jet, on the back of the chairs and piled in the wardrobe. The room has a double bed, a cot, a bureau and two chairs. One of Madeline's room mates is a salesgirl in a sample shoe store, the other a cashier in a restaurant. The air of the room is heavy with odors from the kitchen. There is no free parlor in the house and all three girls meet their "gentlemen friends" on the door step or in the entrance hall. One of them in speaking of the boarding place said, "The proprietor of this boarding house is a good old soul; she makes us girls 'march the chalk line.' No coming in late nights like down there on Broad street."

Case III. With a private family of South 18th street, lives a young girl, a demonstrator in an uptown store. This family takes two boarders who room together. The house has seven rooms and is very clean and neat. The women pay $1.75 apiece for their room with bread and coffee in the morning. If they want dinner on Sunday, Mrs. Z. charges them 35 cents. The parlor of this house is free for use, except when the husband is at home; then, it is understood that he wishes its exclusive rights.

Case IV. Helen B. lives in an expensive district bordering on the student section of Spruce street. Her small hall bed room is three stories up, clean and tidy, although the sanitary equipment of this house is poor. The plumbing is enclosed, the tub is tin and the water scanty, and there are only two baths for 26 people. Helen pays $2.25 for her lodging. She takes two meals a day at a boarding house across the street, for which she pays $3.25 a week. She eats a ten cent lunch in the store dining room. Her salary is $7.50; her expenses average $6.10 a week for food and lodging; she generally has a surplus of $1.40 for clothing, health and amusement.

Case V. No. —— Fernon street. Here one finds a family of six—a father, a mother and four girls. The girls are respectively 14, 16, 19 and 22 years of age. The two younger girls attend school; the other two sell goods in a large department store at $7 and $8 a week. The father is a mechanic and receives approximately $13 a week. The house is small but cosy, the rent being $14 a month. The furniture is old but kept in good repair. On the first floor is a parlor, dining room, and kitchen. On the second are the bed rooms. There are no extra articles to crowd the house. What this family has is in constant use.

Six Typical Account Books.

The keeping of the expense account books already described has made available for this study the actual records of the expenditures of selected girls. The material thus collected affords an accurate

means of appreciation of the real lives of these girls and by means of the following six typical stories an attempt is made to visualize these conditions.

Account Book No. 1.

Daphne O. represents truly the courageous salesgirl working against odds. This girl has the talent of getting ahead in spite of obstacles and possesses the self confidence which leads ultimately to success. Her education has been meager; she was obliged to leave school at the eighth grade because her family was poor and in need of the $2.50 wage of a cash girl. This was seven years ago and Daphne is now 20 years old. Her story is simple and the year's account book is monotonous unless woven in with events from the progress of her trade career, which has been brightened by spurts of ambition and the elements of risk. The rapidity with which Daphne went from cash girl to salesgirl was astonishing. At the age of 16, she was raised from cash to stock girl at $4 a week. As a stock girl in the ribbon department of one of the large stores, she was taught to make ribbon fancies and bows and became very expert in the art. In six months, her wage was raised to $4.50 and then to $5 a week, where it remained for 2 years. Daphne then applied at another store for the position of salesgirl, stating that she had had experience in the perfumery department in a store in another city. That of course was not strictly true, but she had heard the demonstrator at the toilet supply counter say to customers hundreds of times, "Ladies, Dorin's Face Rouge is absolutely harmless and warranted to produce only a flesh tint which cannot be detected in the lamp light. Let me show you." Daphne's story was accepted and she was taken on as a regular saleswoman in the perfumery department at $8 a week. Her yearly account book follows:

ACCOUNT BOOK NO. 1.

	Week.	Year.
Rent and food,	$5 00	$260 00
Clothing,	35	18 20
Insurance,	3 00	156 00
Extra food,	11	5 72
Church,	25	13 00
Car fare,	58	30 16
Total,	$9 29	$483 08
Income ($399 less $2.56 fines),	7 62	396 44
Deficit,		$86 64

The account does not include expenditures for recreation or health, or make any mention of spending money. The girl is pale; the only amusement indulged in as far as could be discovered is going

to church on Friday night and Sunday. The clothes item is particularly spare consisting chiefly of such articles as a dress, a, pair of shoes, a hat, a waist and a suit. The account moreover shows a large deficit. This deficit does not seem to be caused by extravagance in any one line except insurance. This is higher than the average. The insurance consists of death as well as sick benefits The death benefit belongs in reality to another member of the family and is kept up by Daphne merely so that it will not lapse.

Daphne lives at home with her mother and one sister. Their house contains eight rooms and has a small back yard planted with flowers. The monthly rent is $19; gas for the year averaged $2.17 a month, while from November to March one ton of coal per month was bought, costing $6.50 a ton. Daphne pays $5 a week to her family for her room and three meals. She carries her lunch. On Sunday, she does her own washing and ironing and makes her own clothes, with the exception of a tailored suit.

Account Book No. 2.

Another story is as follows: Agnes P. was born in Baltimore about 50 years ago. Her only source of income for 15 years has been her own earnings. Not only is she self-supporting, but until two years ago, she helped a widowed sister. The sister kept house, supplied the furniture and did some dressmaking. Agnes at that time was getting $8 per week and later, $9. The sister was very frail and finally died. The house was shut up at once, the furniture sold and Agnes went to boarding in the centre of the city.

Agnes has held the same position with the firm where she is employed at present for fifteen years. In addition to her salary she receives a commission sometimes of $35 for six months, depending on the amount of sales; more frequently the amount is $18. Agnes has lately been put on the "honor roll' and comes in on the second shift—10 A. M. to 5.30 P. M. She is bright, genteel, well poised and capable.

Her home consists of a single room without sunlight, in a boarding house. In this room is a cot, a wardrobe, a worn strip of carpet and a shirtwaist box. Agnes takes two meals a day at the boarding house, for which she pays $4 a week. The sanitary conditions of the house are good. There is a parlor on the first floor which contains two windows looking out on a brick back yard.

Agnes goes regularly to church and to charity benefits and concerts. This costs $11.44 annually. Last summer, she did not go away for her usual two weeks' vacation. She is giving a niece the money with which to go to business college. She spent 70 cents a week or $36.40 a year for extra food, and insurance paid quarterly, amounted to 98 cents weekly or $50.96 a year. Her yearly income of $623 was reduced by fines to $620.40.

ACCOUNT BOOK NO. 2.

	Week.	Year.
Room and board,	$4 00	$208 00
Clothing,	77	40 04
Insurance,	98	50 96
Extra food,	70	36 40
Laundry,	50	26 00
Newspaper,	02	1 04
Church and recreation,	22	11 44
Contribution to relative,	94	48 88
Total,	$8 13	$422 76
Surplus,	3 80	197 64
Total income,	$11 93	$620 40

This budget is not extravagant in any item and allows a fair provision for the future to be made. In many ways, the budget is deficient, as there are no expenditures cited for car fare, physician's advice or dentistry.

Account Book No. 3.

Margaret M. is Irish-American. Her father and mother were born and married in Ireland, and then came to this country, where the two children of the family were born. Margaret, the younger of the two, is now 40 years of age and is a representative example of the average woman receiving an $8 wage. She is neat, honest, fairly skilled as a saleswoman and tries hard to get along. Her father died four years ago, the mother is an invalid and is able to attend to a few household duties only. Margaret and her older sister, who gets $10 a week as a bookkeeper in a manufacturing house, support the family. Margaret works steadily, is never sick and takes only the two weeks' paid vacation in summer. The total income for the year is $398, less the fines $6.40, or $391.60.

ACCOUNT BOOK NO. 3.

	Week.	Year.
Rent and food,	$4 00	$208 00
Clothing,	1 83	95 32
Insurance,	25	13 00
Extra food,	10	5 20
Car fare,	60	31 20
Church,	13	6 76
Recreation,	23	12 08
Vacation,	29	15 00
Health,	9	*4 74
Christmas gifts,	9	4 42
Total,	$7 61	$395 72
Income,	7 50	391 60
Deficit,		$4 12

*The health item includes a $1.00 dentist bill for Margaret and $3.74 medicine bill for her mother.

This deficit consists of clothing bought on a transfer at the store where Margaret worked, and $1 is taken out of her pay envelope every fortnight. The clothing item seems relatively extravagant yet Margaret was not dressed better than her position as saleswoman in a good department store required. Her clothes were plain, and neat, of good quality, although they showed constant pressing and mending. Her Sunday clothes are new every year. The family has always lived in the same neighborhood in West Philadelphia where they rent a house at $18 a month. There are five rooms and a bath in the house. The food eaten is bought at a corner grocery store and consists generally of vegetables and a small portion of good meat. Two meals only are prepared at home. Margaret herself says that she lives very much as others of her own class, which she calls "medium."

Account Book No. 4.

Eleanor P. became assistant buyer in the hat department of a small department store two years ago at a salary of $9.50 a week. She is by birth a French-Canadian and entirely without friends in the city, having come from the New England farm country not very long ago. Eleanor occupies a furnished attic room in a lodging house down on Pine Street. The house, which is an old style mansion not far from the river, still contains the silver door-plate of the original owners and possesses much of its former elegance. After climbing numberless stairs, one comes upon a pleasant room with couch bed, reading table, lamp, the usual clothes press, white curtains and cretonne covering for the chairs. Eleanor, without the

landlady's knowledge, cooks coffee for breakfast on an alcohol stove. Lunch is bought in the store lunch room, while dinner is eaten at a distant restaurant at 7 o'clock. Eleanor's account-book kept very carefully for the twelve months of 1913 follows:

ACCOUNT BOOK NO. 4.

	Week.	Year.
Rent ($1.50); food ($2.58),	$4 08	$212 16
Insurance,	10	5 20
Clothing,	1 84	95 68
Newspaper,	08	4 16
Laundry,	50	26 00
Spending money,	15	7 80
Vacation,	45	23 40
Health,	09	4 68
Building and Loan Association,	1 15	59 80
Sundries,	71	36 92
Total,	$9 15	$475 80
Surplus,	35	17 50
Total income,	$9 50	$493 30

On the whole Eleanor presents a comfortable appearance. She designs and makes her own hats and buys all her clothes ready made. She has had a record for the past six months of making a new hat every four weeks, using odds and ends from most expensive trimmings. Spending money was invariably used for stocking up with toilet articles, scented soaps or powders. A daily paper was always bought as a necessity for the study of the advertisement sections of different stores in the city. The most striking thing about this budget is the low rate of expenditure for lodging and subsistence, in comparison with the accommodations secured; although the neighborhood is run down and far from desirable. In this vicinity, are cheap lodging houses for men. At night, the streets swarm with half drunken sailors and hucksters. Eleanor does not consider this a drawback however, as she says she knows how to take care of herself and people never bother her.

Account Book No. 5.

The next girl is English-American; she is entirely self-supporting as her parents are dead. She occupies a second floor back room in a boarding house on Oxford Street. The house is well cared for and clean but the furnishings are old and of ordinary quality. The girl's bedroom contains only the bare necessities—a wooden bed, a dresser, a wash stand and one chair. There are a few photographs on the bureau. The green window shade is torn. The bed clothes

have been patched and re-patched and yet have large holes. There is a bath and a parlor in the house. For the exclusive use of the parlor a charge of 15 cents a night is made. Anita's account-book shows thrift and intelligent buying.

ACCOUNT BOOK, NO. 5.

	Week.	Year.
Rent and food,	$3 50	$182 00
Extra food,	27	14 04
Clothing,	67	34 84
Insurance,	1 25	65 00
Laundry,	10	5 20
Car fare,	09	4 68
Recreation,	23	11 96
Health,	10	5 20
Sundries,	56	29 12
Total,	$6 77	$352 04
Surplus,	93	47 96
Total income,	$7 70	$400 00

Anita spends as little as possible for clothing, converting her outside clothing into under clothing when it is too worn to be remade. She does most of her laundry for economy. This accounts for the small expense of that item. She lives about sixteen squares distant from her work and walks to and from business—no small distance from Oxford Street—in all sorts of weather. Her diversion is reading books which she gets at the Booklovers' Library for a small fee. About once a month she goes to the theatre and a charity entertainment or to a club supper; on Sundays, she rides to the park and walks back for exercise.

Account Book No. 6.

The next girl whose story is revealed through her account book is that of a salesgirl in a tailored hat shop. She is the best known of those chosen as types for this study, as a close friendship developed between the investigator and this girl. Many episodes of her girlhood, treatment by employers, temptations, etc., were related.

In the past she, like many other salesgirls, was out of work for protracted periods and during that time became disheartened and despondent. It was found too that Mabel often lacked the bare necessities of life, wearing a cheap sweater to work one bitter cold winter because she could not afford a warm coat. At another interval when business was dull and Mabel's salary was reduced to $5, she learned a factory trade to tide her over until her former employer could give her steady work at $8 a week.

Mabel's industrial life passes quickly in review. From the time she left her father's farm in Williamsport to the present it has been one of unrest and uncertainty. The first home in the city was an organized boarding house. From there she drifted to a cheaper form of living—lodging and eating in a corner cafeteria or in a cut-rate restaurant. The wage story can be narrated in even briefer form, $3.50, $4, $5 and finally $8 a week, the highest wage paid in the present shop. Rapid promotion Mabel attributed to changing departments and "siding up to the new boss."

Mabel is economical and exceptionally shrewd in a business way and at present, circumstances allow her to be fairly comfortable. She lives uptown and has a large room on the second floor, facing a vegetable and flower garden. The room itself is spotless and the curtains hang stiff with starch. No extra furniture crowds the place. In talking of the simplicity of her belongings, Mabel said, "I prefer to spend my hard earned cash on comforts and not on frivols and paints for my face." She indulges in very little amusement outside of her boarding house. Once a fortnight, she goes to a "movie" or to a party with a "gentleman friend." More often the landlady asks her to play a game of cards or read aloud.

All of Mabel's yearly earnings are included in the following expenditures.

ACCOUNT BOOK NO. 6.

	Week.	Year.
Room, board and laundry,	$5 50	$286 00
Insurance,	10	5 20
Clothing,	75	35 82
Sundries (health, etc.),	60	31 10
Personal (candy),	07	3 67
Special (bedroom furniture),	46	24 00
Savings,	47	19 41
Total,	$7 85	$408 20

This account illustrates that even with persistent care and forethought and without expenditures for car fare or for recreation it was not possible for this girl to save for a "rainy day." There is no article in the statement which can be called unnecessary. The only extra found in the figure is the 7 cents a week item—candy bought at a corner newstand. At one time, Mabel had savings, obtained by putting away a cent at a time in a penny bank. Sickness last year diminished it quickly and necessitated Mabel's working day and night to try to make up the loss. The clothing purchased shows careful planning. Mabel described her buying thus: "My work

clothes are black; I trim and retrim the waists and usually wear a black apron. Haven't had time to make a suit for three years. All I buy regularly are shoes and neck pieces; they must be smart."

Finally, these narratives although narrow in scope and without statistical pretensions, indicate accurately the standard of living which working girls receiving $8, $9.50 and $12 weekly can maintain. Furthermore, they contain pertinent questions that rankle in the hearts of these girls. How can this be kept up? What if prolonged sickness should come? What if unexpected misfortunes arise? What about inevitable old age?

SUMMARY.

The following brief summary attempts to emphasize the more important elements of the foregoing study in order to make possible an estimate of retail selling as an occupation for young girls beginning their wage-earning careers.

In physical environment, mercantile establishments have, by the very nature of their occupation, an opportunity to reach a standard which is more readily attained than in most manufacturing occupations. The elements of noise and dirt common to many factory processes are practically lacking in the handling of new stock. It is moreover generally true that the stores have taken the lead of the factories in the establishment of lunch and rest rooms and properly equipped washing and dressing facilities. These advantages to physical well-being are somewhat offset however, by the frequently insufficient ventilation which is accentuated in crowded hours and which, as has been pointed out, reaches an extreme in the unsuitable conditions of basement selling.

A distinct advantage of retail selling is the opportunity afforded of avoiding both the continuous standing or sitting which is so prejudicial to the health of women. If this opporunity were generally realized and a systematic policy of providing seats and training girls in the wise use of them were adopted, a direct return in conserved energy and consequently greater efficiency would result. If to this improvement were added the elimination of basement selling—as has been successfully accomplished elsewhere—there would remain little to be desired for the physical well-being of the workers in retail stores. Thus also would be removed a source of frequent complaint among employees as well as criticism by the public.

The occupation of retail selling lacks the element of monotony which is characteristic of most routine occupations. It brings the saleswoman into direct relation with many personalities and is a developing factor in character building. To the successful saleswoman a knowledge of stock is indispensable. This carries her mind into

many fields of manufacturing activity and thus quickens intelligence.

In receiving pay for holidays and summer vacations store women have a distinct advantage over those in the factory trades. This advantage does not however extend to pay for overtime work and unless overtime can be eliminated by all the stores, as has already practically been done by several, a just payment for the same beyond a supper check is heartily to be urged.

The financial disadvantage at which the saleswoman is placed in being obliged to wear special clothing for work has often been cited. The purpose of uniform clothing for employees, is evidently to ensure a tidy appearance among them; to discourage rivalry in dress; and to encourage a co-operative spirit.

The 10% discount on all purchases made in the store by employees and the fact that girls usually have first choice at specially priced clothing, covers no doubt in many cases the additional outlay for store dress, but it has less value for the girl who has little or no money to spend upon herself after the bare necessities of life are paid for. Charge accounts to employees, such as have been described in the report, undoubtedly save many a girl the necessity of dealing with purchasing agents, but the amount of charge should be carefully regulated in proportion to wages in order to remove the temptation to the girl of buying beyond her means.

It must be remembered that in the wage quotations of the report no allowance is made for deductions by fines. Much just sentiment exists on the part of employees against fining and it is believed that by this system the stores occasion much ill-will on the part of employees. One small department store deals satisfactorily with the problem of lateness by allowing extra paid vacations to the four girls having for the year the least amount of tardiness recorded against them.

We have seen in Chapter IV how the economic problem is worked out by store women. Whether they live at home or elsewhere, board is the first thing to be paid and the remainder of the earnings is stretched as far as possible over clothing and other necessary items. It has been found that in order to maintain a normal existence, an average weekly expenditure of $4.40 for food and shelter, $1.71 for clothing, $ .60 for car fare, $ .17 for recreation and $1.65 for laundry, health, insurance and all incidentals—a total of $8.53—is necessary. The wage tables reveal that in the down-town department stores 69.2% of the women earn less than this amount and 50.9% earn less than $8 in neighborhood department stores, two-thirds of the women earn under $8 and practically all those in the smaller neighborhood stores receive still less. The vital question facing these women is how to provide for other necessaries of mind and

body after food and shelter have been paid for. The strain attendant upon this continual struggle must in the end tell on health and business ability.

In the five and ten cent stores 69% of the women earn under $6 and 91% under $7. In this connection the Five and Ten Cent Store Magazine, a trade journal, recently published* an article on stealing, advising managers how to avoid dishonesty among employees. The writer says in part, "Certainly girls who are boarding or living away from home can not earn enough money in your store to make ends meet and if you allow yourself to be governed by the fact that a girl may be a good saleslady, bright and intelligent, etc., and put her on for that reason alone, you are simply inviting her in many instances to be dishonest." He then advises managers that "girls who live at home and have church connections are the most desirable, provided their education and ability are satisfactory."

It is not only the five and ten cent stores which seek girls living at home. The management of a large department store declares this to be its aim as far as possible. If such a policy were carried out generally, what would become of the 36% of the women whom the study has shown to be adrift? And, moreover, of the remaining two-thirds all, except perhaps 7% who work for so-called pin money, are not only entirely self dependent, but many provide for needy relatives as well. Unless a wage sufficient for a normal existence is received either part of the responsibility of a girl's upkeep is borne by her family or she lives below a normal standard.

This is without question a serious situation. There is no doubt however, that it could be met in great part by an extension of the policy of training and education which has already been established in two stores with resultant higher wages. The present co-operation of several of the stores with a girls' high school in which a course in salesmanship has been established as a part of the curriculum opens a channel for the further extension of such training. Just as the present loss to the management occasioned by the irresponsible work of untrained employees is in part offset by low wages, so the increased cost of efficient work would be correspondingly reduced expenses. Along with increased education and training should come a greater incentive to girls for doing good work. This will be possible only as more of the higher positions are open to women as well as to men in department store organization and thus only can the stores hope to attract that intelligent element of women workers whom they are so desirous of securing.

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*Issue of October, 1914.

APPENDIX.

1. Schedule-budgets.

O. L. R. S. I.

Firm _____ Date _____

Age _____ Dwelling Place _____

M. S. D. N. R.

Conjugal Condition _____

Grade Left School _____

Wholly Self-Supporting _____ Supporting Others _____

And When Unemployed _____

Live at Home _____ Contribution to Family _____

WEEKLY EXPENSES

Board: Place _____ Cost Per Week _____ Furnished Room: Cost _____

Car Fare _____ Lunches _____

Laundry _____ Spending Money _____

Clothes Per Year _____ Dues Per Month _____

Savings: _____ Wages _____

Remarks _____

Month of ..... 19 .....

RECEIPTS | EXPENSES

Day.	Date.	State where from. (Salary, gifts, etc.)	Amount.	Full board or	Food (when separate.)	Lodging or room rent. (When separate.)	Clothing.	Laundry.	Car fare.	Health. (Doctors, dentists, medicines, etc.)	Recreation. (Concerts, lectures, theatres, trips, etc.)	Regular support of others.	Sundry expenses. (State what.) (Including gifts, clubs, church, classes, candy, etc.)	Total daily expenses.	Savings and insurance.	Name articles bought.
		Weekly totals														
		Weekly totals														
		Balance on hand														

Vol. 2. No. 2.

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

FEBRUARY, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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STATEMENT OF ALL ACCIDENTS REPORTED TO THE DEPARTMENT OF LABOR AND INDUSTRY DURING FEBRUARY, 1915, GIVING DAY OF THE WEEK ON WHICH THE ACCIDENTS OCCURRED.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.		
Nursery, ...	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....	.....
Engineering, .	....	....	1	1	....	....	1	....	....	3	....	....	....	3	.....
Bldg. trades,.	2	4	4	3	6	4	8	1	1	29	....	....	....	31	.....
Chemicals, ...	1	10	2	2	4	3	2	1	1	22	....	....	....	24	.....
Clay-glass, ...	4	10	7	9	8	13	5	1	6	49	....	....	....	56	.....
Clothing, ...	....	....	1	2	1	....	1	....	1	4	....	....	....	5	.....
Food, ...	....	3	3	9	5	1	5	1	1	24	....	....	....	26	.....
Leather, ...	....	4	3	3	2	2	3	....	1	16	....	....	....	17	.....
Liquors, ...	....	1	1	....	1	1	2	....	1	5	....	....	....	6	.....
Lumber, ...	....	6	1	10	2	8	1	....	2	26	....	....	....	28	.....
Paper, ...	....	5	3	8	....	4	4	....	1	21	....	....	2	24	.....
Printing, ...	....	...	....	1	....	2	1	....	....	4	....	....	....	4	.....
Textiles, ...	1	7	3	5	3	7	3	1	4	24	....	....	....	29	.....
Miscellaneous,	....	3	2	1	3	6	4	....	2	17	....	....	....	19	.....
Laundries	....	1	....	....	....	1	....	....	....	2	....	....	....	2	.....
Metals, ...	50	219	209	190	192	197	116	5	86	1,082	....	....	....	1,173	.....
Mines,*	14	92	74	93	86	70	58	51	86	344	....	....	....	481	.....
Public service*	50	183	175	182	194	186	132	3	56	1,043	....	....	....	1,102	.....
Tobacco, ...	....	1	....	....	1	....	....	....	....	1	....	....	1	2	.....
Unclassified, .	....	1	1	1	....	1	3	1	....	6	....	....	....	7	.....
Total, ..	122	550	490	520	502	506	349	65	249	2,722	....	....	3	3,039	3,039

*Figures given under these heads do not include accidents occurring in coal mines reported to the Department of Mines or those occurring on the right of way of public service corporations reported to the Public Service Commission.

SUMMARY OF ALL ACCIDENTS REPORTED DURING THE YEAR 1914.

The summary of accident reports for the year 1914 includes all the accidents reported to the Department of Labor and Industry, to the Department of Mines, and to the Public Service Commission. Accidents thus reported have amounted to 53,113. Of these 2,362 are fatal, 3,122 are serious, and 47,629 are minor.

	Fatal.	Serious.	Minor.	All.
Accidents to Employes in Industrial Establishments.				
Employes, male,	377	3,090	34,437	37,904
Employes, female,	2	32	188	222
Total,	379	3,122	34,625	38,126
Accidents to Employes In and About Coal Mines.				
Employes in anthracite mines,	597	.....	1,051	1,648
Employes in bituminous mines,	412	.....	954	1,366
Total,	1,009	.....	2,005	3,014
Accidents to employes Steam and Street Railway Service.				
Employes—Steam railways,	294	.....	7,791	8,085
Employes—Street railways,	13	.....	152	165
Total,	307	.....	7,943	8,250
Accidents to Employes—All Industries.				
Employes, male,	1,693	3,090	44,385	49,168
Employes, female,	2	32	188	222
Total,	1,695	3,122	44,573	49,390
Accidents, Passenger and Trespassers—Railway Service.				
Passengers, steam railways,	8	.....	881	889
Passengers, street railways,	14	.....	1,486	1,500
Trespassers, steam railways,	630	.....	640	1,270
Trespassers, street railways,	15	.....	49	64
Total,	667	.....	3,056	3,723
Accidents—Employes and Others.				
Males,	2,360	3,090	47,441	52,891
Females,	2	32	188	222
Grand total, all accidents,	2,362	3,122	47,629	53,113

FIRST AID METHODS A PART OF THE SAFETY MOVEMENT.

In taking up the safety movement which is now rapidly spreading over this State and country, many manufacturing establishments have found it both humane and profitable to incorporate into the safety work of their particular establishment, "first aid" training. The necessity for this can be readily understood when it is known that many injuries, if given prompt treatment and care on the spot before the removal of the injured person to hospital or home, will not result in serious complications. This fact is demonstrated vividly on the battlefields of Europe at the present time.

Reports from those fields of operation state that each soldier is provided with a small "first aid" packet, in order that he may render "first aid" treatment to himself or his neighbor. Correspondents have repeatedly stated in their articles which have appeared in the magazines of this country that the small "first aid" packets have been of material help in reducing the number of serious cases resulting from infection of minor wounds.

So it is in accidents occurring in manufacturing establishments. Some plants are far removed from hospitals or places where the services of a physician can be obtained, or in some cases considerable time may elapse before the arrival of a physician at the place where the injury occurred. Under these circumstances, workmen should be trained in "first aid" methods, as the use of such methods in any injury will greatly lessen the chances of infection or blood poisoning; moreover, in cases of severe injury, in which bones are broken or the soft tissues mangled, the use of prompt and efficient aid to the injured may avert permanent, partial or total disability.

One of the large steel corporations in the western part of the State, the Cambria Steel Company, has taken up the safety movement very extensively. They not only are offering diplomas to employees who become proficient in "first aid" work, but they also have undertaken, through their "first aid" trainers, to spread the movement among the school children. Once a week their "first aid" trainers give a demonstration at the different school buildings, and during the summer the children on the playgrounds are taught these same principles.

The value of this movement was recently demonstrated in a story which has come to the notice of the Department. A man walking along the street slipped and fell, injuring his head. Two boys came along and seeing the accident, immediately, by means of sticks and their own coats, rigged up an improvised stretcher, and with the aid of

this stretcher, carried the injured person to a physician's office. The injured man was wholly conscious, and would have been able to walk to the office, so the physician asked the boys:

"Why did you go to the trouble of making this stretcher and carrying this man here? He would have been able to walk here, himself."

The boys looked at the physician a minute, and in apparent disgust said:

"Our 'first aid' rules tell us always to keep a person with head injuries in a reclining position."

The physician, knowing that the boys were right, warmly congratulated them, and expressed to them his generous commendation of the thoroughness with which they carried out, in a practical way, the principles which they had been taught.

Another instance of this valuable training occurred in the plant of this same company, and is well worth noting.

"Sunday morning, September 20, about 8.45 A. M., Mr. H— and Mr. S—were working on a pole above the Franklin Works of the Cambria Steel Company on a line carrying 2,200 volts into the company's mines. H— was engaged in making a soldered joint, when he accidently gripped a different wire in each hand, sending 2,200 volts through his body and holding him fast. S— immediately insulated himself by standing on the wooden crossarm of the pole, and with much force released H— from the wires, when he dropped unconscious to the ground, 16 feet below. Three fellow workmen rushed to his aid. Their first impression was that H— had been fatally injured, as no signs of life were apparent. They were not content to leave their fellow workman lying apparently dead, but rather, remembering their 'first aid' training, they immediately placed the unconscious man in the most convenient place and began their task of restoration by using the Shaffer method of artificial respiration which is used in cases of severe electric shocks.

"In order that the public may know the first thing to be done when an occasion presents itself to resuscitate some one receiving an electric shock, it might be well to mention a few acts performed in the resuscitation of Mr. H—. He was first laid on his stomach with his head to one side and arms outstretched. They rubbed his palms and forearms very briskly and applied cold water to his head and face. One man knelt astride his back facing his head, using the prone method of artificial respiration, i. e., by moving backward and forward and pressing inward with his hands on the lower ribs about 12 times per minute. These men worked persistently, almost without hope, but with much confidence in 'first aid,' and in 25 minutes their

efforts were rewarded by noticing very slight signs of breathing. This gave them new encouragement, and in 20 minutes more, Mr. H— recognized one of his fellow employees.

"In the meantime, Cambria Steel Company's ambulance was ordered to the scene of the accident and as soon as respiration was fully established, he was hustled off to the hospital, where further treatment was administed, principally for the burns. The fact that these men were drilled in 'first aid' work and were sufficiently composed to execute the right thing at the right time is all to which we can attribute Mr. H—'s being alive to-day and suffering only from the burns received at the time he received the shock."

The value of this "first aid" training can thus be readily understood, and the Department of Labor and Industry would urge the public generally to become familiar with the principles underlying "first aid" treatment for the injured. There are many cases where treatment of this kind would be of vital importance to an injured person in cases of emergency.

The Department is also glad to announce that many establishments throughout this State have taken up this training among their employees, and have reported many cases, in which serious results from injuries have thus been avoided.

NATIONAL SAFETY COUNCIL MEETING IN PHILADELPHIA.

A preliminary announcement has just been made that the next meeting of the National Safety Council will be held in Philadelphia, October 19th-23d, 1915. Every industrial concern in Pennsylvania which is interested in the Safety Movement should affiliate itself with the National Council. It is hoped that representatives from a large number of these industries will find it convenient to attend.

Information in regard to the Council may be obtained upon application to either W. H. Cameron, Secretary, 72 West Adam Street, Chicago, or Dr. Francis D. Patterson, 3500 Grays Ferry Road, Philadelphia, Pa.

BLOOD POISONING.

The most common form of blood poisoning occurring in the industrial world or in everyday life is that known under the term of septicaemia. This condition always arises from the entrance of germs at some point where the skin has been broken. Such wounds may be deep, extending through the skin and well into the soft tissues beneath, as a puncture by a nail or other sharp instrument; or they may be very superficial, simply a removal of a part of the skin varying from a small scratch to destruction of large areas, as found following crushing injnries, especially those caused by machinery in motion.

The importance of the consequence of any injury, so far as blood poisoning is concerned, is not at all dependent upon the extent of the injury, but upon the kind of germs which enter at such point, and upon the conditions which allow them to multiply in the wound. The results of this condition, which it shares in common with other dangerous illnesses are the intense suffering, prostration and danger of loss of life and absence from work, with its accompanying loss of income and increased expenditure for medical services.

In addition to this, blood poisoning has consequences which are more distinctly its own. Chief among these is deformity. This may show itself in a distortion of the parts affected, together with stiffening of the joints, thus impairing the usefulness of the member or rendering it entirely worthless. Worse than deformity, however, is the amputation of a hand, arm or leg. This, while not an everyday happening, occurs so frequently that most industrial communities of any size contains living illustration of these facts.

A few cases of blood poisoning may occur with even the best care and attention, but the greater majority can and should be avoided. All that is needed is proper attention. By proper attention is meant careful and clean dressing immediately after the injury has occurred, and not, as is so often the case, after the lapse of a day or two, when the surrounding area has become red, swollen, hot and painful, with possibly more or less pus exuding from the insufficient opening of the original wound.

Such conditions arise only through ignorance or carelessness, both of which can be overcome by proper instruction in and appreciation of the principles of "first aid." This system depends for its efficiency on prompt and proper care. By covering the wound with a sterile

dressing as soon as possible after an injury has occurred, the chances for germs entering the tissues either from the air or unclean substances with which might come in contact are reduced to a minimum. The common practice of applying to an injury oily or dirty waste, a soiled handkerchief or a quid of tobacco are mentioned only to be condemned as far more dangerous than no attention whatsoever.

As soon as practicable after the "first aid" dressing has been applied, the wound should be seen and dressed by a competent person: This may mean a physician or a nurse. One dressing, however, is not sufficient, and the wound should continue to receive careful attention until every open spot has been covered over, for just as long as there is a break in the skin, there is always an opportunity for germs of greater or less virulence to find a lodging place.

It takes a little more time when an accident occurs to be clean and careful, but the results of such case are so marked that no workman can afford to take chances any more than he can afford to disregard any other safety device.

ELEVATOR ACCIDENTS.

Few people realize the great number of elevator accidents which are continually occurring throughout Pennsylvania. They do, however, think that the majority of such accidents are caused by breaking cables and subsequent dropping of elevators. On the contrary, elevator accidents, almost without exception, are caused either by improper equipment, careless manipulation at the landings, or else by easily remedied defects in the construction of the car or shaft.

The most frequent causes of accidents at landing are lack of care on the part of some person. This may be due either to the carelessness of the operator or of some other persons. Very seldom have accidents occurred from defective equipment, and ones that have occurred from this cause could have been prevented in most cases if a careful inspection had been held at regular short intervals of time.

Two instances which recently came to the attention of Inspectors of the Department of Labor and Industry will illustrate how thoughtless persons can become while they operate elevators.

An Inspector had occasion to go to the upper floor of an office building in one of the large cities of this Commonwealth. After transacting his business in the office on the fifth floor, he walked to the elevator shaft and rang the bell. When the elevator had stopped at the floor and he had stepped into it, the elevator attendant, a young man of eighteen—the minimum legal age for elevator operators—reversed the power and the car started to descend. He immediately turned to a novel which he had been holding in one hand, and leaning against the side of the car, started to read. This continued until the car reached the street level.

The Inspector naturally remonstrated with the operator about the practice, and also took steps to see that this custom was not continued. Every person who has occasion to use an elevator and who sees the operator reading or doing anything else which prevents the free use of both hands during the time he is operating the elevator should consider it his duty for the sake of the safety of himself and his fellow-man to see that the practice is stopped immediately, even if it is necessary to call the attention of the owner of the building to the matter.

In another instance a young woman had been injured, several bones having been broken, in an accident. An Inspector was sent to the scene by the Department of Labor and Industry to investigate

the accident, in order to ascertain if some means could not be taken to prevent a similar accident. The superintendent took the Inspector up on the elevator to the third floor where the accident had occurred, and was about to step off the elevator without locking the starting cable. The Inspector drew his attention to this neglect, and explained to him that some time he might be stepping off of the elevator when some person on one of the other floors would attempt to start it. This might result in a serious, if not fatal, accident.

This advice, however, seemed to make little impression on the man. On the return journey, the elevator was stopped at the second floor. While the Inspector was examining the door at the back of the elevator, the superintendent raised the gate in the front and started to step off. At that instant, some one below started the elevator. The superintendent had neglected to lock it, as he had been warned to do only a few minutes before, and in order to prevent being hurt he was compelled to jump quickly back on the elevator.

The value of the advice was thus brought home to him, and when he reached the first floor he called together all his employees who had anything to do with the operation of the elevators, and told them in very strong terms that any one found not locking the elevator before getting off, would be dismissed. This practice should be followed in all establishments.

SAFETY FOR FIREMEN.

There has been a great deal said about safety for employees in case of fire, and much emphasis is being placed on protective methods, such as an orderly arrangement of all working materials, constant practice of fire drills and in the use of fire fighting equipment at immediate service in industrial plants. The safety of employees is the purpose emphasized. There is another group of men also highly deserving of consideration in these protective schemes.

In case of a fire in an industry, that becomes of large enough proportions to call in the company's firemen or the town or city firemen, some thought should be given in advance to the conditions which would make their work most safe and efficient. Many of the conditions which would insure safety for firemen are also the same under which all persons in a plant would be best protected; but in repeating the details, the fireman's safety is emphasized, since to this group of men belongs the duty of assuming the most dangerous tasks connected with burning buildings. The employees' duty is to leave these buildings as rapidly as possible; the fireman's duty is to enter and attack the fire.

In entering or leaving buildings with greatest speed and safety, the first requirement is free passageways. In plants where the orderly arrangement of all machinery and materials is the constant rule, nothing more in this matter is needed as a fire precaution. Orderly arrangement would include aisles free from any accumulation of materials that would cause a person walking rapidly to stumble or fall. Another necessity is that the flooring of all passageways should be level, free from sudden depressions or any unexpected irregularities. It is to be remembered that the smoke of a fire would be apt to shut off light in many such places and flooring irregularities would become dangerous. All openings should be carefully guarded.

The need of stopping all machinery in case of fire is generally recognized as of great importance and regularly attended to: but for the safety of firemen entering machine shops, it is of value to emphasize the great danger to them of machinery left in motion.

Another condition that would greatly endanger the lives of firemen is the presence of explosives in burning buildings. It has been found in many instances that persons constantly handling explosive liquids or other material become exceedingly careless concerning them.

The remedy would be to keep all such material in storehouses built purposely for it at a distance from the main shops, that would insure the least harm in case of fire and explosion.

A frequent cause of accidents to firemen is falling glass; but at the present time, wire glass is coming constantly into greater use, and is giving effective service. It not only prevents accidents from falling glass, but is a greater barrier to smoke and flames. Wire glass in metal frames used for all windows is one of the best aids in preventing the spreading of flames and insuring the safety of the lives of those whose duty it is to fight fires.

In view of the fact that in case of fire the firemen are the ones by whom the greatest risks must be taken, every scheme of fire prevention and protection should include safety not only to the employees of any industry, but also to the firemen. It is one of the purposes of the Department of Labor and Industry to assist our State industries in every way possible to prevent fire, or in case of its occurrence, to provide the greatest degree of protection.

DEFECTIVE FIRE FIGHTING APPARATUS.

The Inspectors of the Department of Labor and Industry have found throughout the State too many establishments wherein fire fighting equipment was unfit for service. There seems to be a feeling prevalent among a great many persons that equipment of this kind if once placed in position will not need any attention whatever until a fire occurs in the establishment. As a result, in many cases when a fire does occur and employees try to use the equipment which is furnished, they find that it is unserviceable.

For example, in a large number of establishments, hose connections have been placed throughout the plants, attached to which are lines of hose. Inspection has revealed the fact that much of this hose has been in position for such a long time, or has been used for other purposes, that it has rotted, and would be unserviceable if water should be turned on into it. In some cases, the hose has been removed entirely, and its absence had not been noted until the attention of the management was directed to this fact. In other cases, the nozzle which is usually attached to the line of hose, was found to have been removed, and could not be found.

Installations of this kind cost money, and should be inspected at frequent intervals by the management, to see if they are in good service, or have not been removed and used for purposes other than that for which it was purchased.

Fire extinguishers are also too often found in an inoperative condition. In one establishment which was visited by an Inspector of this Department, a fire had occurred three weeks before the time of his visit. He found a half a dozen of the chemical type of fire extinguishers in the establishment, and on examination found that they had not been recharged since the former fire. These extinguishers had been used very effectively in fighting the fire. But for them the fire might have destroyed the establishment. Notwithstanding the great service they had rendered, no attention had been given them since the fire. They would have been absolutely useless in the case of a second fire.

Chemical fire extinguishers should be examined frequently and recharged at least once every year, preferably every six months. During the first month of this year, one Inspector of the Department of Labor and Industry found over one hundred fire extinguishers inoperative or useless in the various establishments which he visited during that month.

The attention of proprietors of establishments and of employees throughout this Commonwealth is accordingly called to the necessity of regular inspection of fire fighting equipment. Apparatus of this kind, to be of any value, must be ready for instant use. The original cost of this equipment is comparatively high, and, if it is not properly maintained, is a total loss to the owner; not only that, but the factory itself is at the mercy of any fire through a false sense of security.

Accordingly, the Department of Labor and Industry would recommend that all fire fighting equipment should be placed in charge of some capable person, and that person should be held rigidly accountable to the management for its maintenance and readiness for instant use. If this is done, there will be less chance of fire fighting equipment being inoperative when most needed.

FIRE DRILLS IN THEATRES.

The Department has been making an earnest effort to bring to the public mind an appreciation of the great importance of fire drills in places where people are gathered in any considerable number. More has been said generally about fire drills in industrial establishments and in schools than about drills in theatres or in other places of amusement.

Even a slight consideration of the character of the large audiences that fill our theatres would show the need of some systematic practice in fire drills. People who go into a theatre are, for the great majority, ignorant of the plan of the building. They see the exit doors. They also know the main door through which they entered. Beyond that, they are ignorant of the building. Women and children probably do not, on seating themselves in the theatre, take the trouble even to note the arrangement of the exit doors, although the latter are carefully marked with red lights.

It is, therefore, easily understood how important it is that the employees of the theatre should be ready to give prompt assistance in case of a fire, without arousing the fear of the audience. As most fires in theatres occur on or under the stage, careful methods can, as a rule, prevent all danger of panic. The employees should become accustomed, by frequent practice, to the special duty that they should perform in such an emergency; some carrying apparatus to the place of the fire, others quickly guiding the audience through the exit doors, etc.

Inspectors of the Department were recently very much gratified to witness an effective fire drill by the employees in the Academy of Music at Reading, Pennsylvania. The manager of this theatre, Mr. Phil Levy, had become impressed with the vital necessity of systematic training in fire drills in places of amusement, and had, therefore, established among his people a careful procedure to be followed in case of fire. The main principle of a drill in such a place is to keep the audience as ignorant as possible of any danger. The drill witnessed by the Department Inspectors was carried on between the acts of a matinee, and without the audience's knowledge.

By a series of fire alarms, each member of the team was advised of the location of the trouble. The first alarm sent in indicated the location of the fire to the manager, ushers and stage hands. The Inspectors were under the stage, where a fire was supposed to have started. In less than eight seconds after the signal, there was a man on the scene with part of the fire-fighting apparatus. Within 23 seconds, all of the squad had quietly reported, each carrying the different appliances, including extinguishers, hose, etc. The last man

to arrive came from the fly gallery, having been obliged to travel nearly a half hundred steps. At the same time, it was observed that the chief door tender, ushers and others connected with the theatre had received the fire call. With the signal, each of the nine exits of the lower floor was manned by an usher, whose duty was to direct the dismissal of the audience, had there been an actual fire. This same signal applied to the ushers and doormen on the upper floors. It was also noticed that the instant the first alarm was given, the electrician threw on all the house lights. (One of the most stringent rules governing the management of the theatre is that at all times the electrician shall be at his post of duty). This alarm was also a cue for the asbestos curtain to be lowered. This curtain is operated in an iron slot which is built in the three-foot, solid brick, proscenium fire wall. When the curtain is down, it provides a perfect fire barrier, and also prevents smoke escaping into the auditorium. Fire ventilators in the stage roof are another means of protection. This arrangement draws all the fire and smoke skyward, and helps to keep all knowledge of any danger from the audience. In case of an actual fire, a second alarm would be sent in. This would indicate that the audience is to be quietly dismissed, and would also notify the orchestra to strike up a lively march, to encourage a rapid and orderly exit.

The theatre in which this drill has been established has a seating capacity of more than 1,400, and in timing the dismissal of the audience through the regular exits at the conclusion of the performance, the house was emptied in two minutes and forty-five seconds. A house rule which is always worthy of mention is the duty of several of the employees to immediately collect all inflammable material brought to the theatre by visiting productions, depositing the unpackings outside of the building into a fireproof vault installed for this purpose. The management is also to be commended for its action in prohibiting in a recent production at this theatre the smoking of cigarettes by men and women taking part in an elaborate café scene. The effectiveness of such a scene may surely be ignored when the fire hazard it invites is considered. Smoking should be prohibited on the stage, in like manner as it has been prohibited under the stage for many years.

It is also worthy of note that the fire alarm system was tested before every performance in order to see if it was in working order.

It is hoped that the time will not be distant when all the managers of places of amusement in our State shall follow the example of this Reading manager, and establish well-organized fire drills for their employees' regular practice. An effective fire drill, such as the one described above, might be the sole factor necessary to prevent the recurrence of such a catastrophe as that of the Iroquois Theatre, in Chicago, with its attendant enormous loss of life and property.

AMUSEMENT PLACES IN PENNSYLVANIA.

It is estimated that fully three-fourths of a million men, women and children gather nightly in amusement places of the Commonwealth. The necessity of seeing that the lives of this vast proportion of the citizens of our State are safeguarded is, therefore, apparent to every fair-minded person.

This should be especially apparent when it is realized that possibly half of this large number of persons is composed of women and children; and also that a large percentage of these persons are strangers in the building. These large groups of people are either ignorant or indifferent as to the means of egress, except for the door through which they entered.

Every audience has only a superficial knowledge of the houses they enter, and the means by which they could escape from the building in case of a fire or panic. They have a feeling of security that all exits are open and that there would be nothing to impede their escape from the building in case of fire or accident. The Department, accordingly, is doing all in its power to see that conditions in these places of amusement are such as to warrant this feeling of security.

During the past year, approximately all of these places were thoroughly inspected. In any one of them, where conditions were found which would tend to make it unsafe, instructions were given to the management to make immediate corrections of these defects. In practically all of these cases, the proprietors or owners of the buildings were desirous of having their places in the best possible condition for the safety and comfort of their patrons. With scarcely an exception, they gave the Inspectors of the Department of Labor and Industry their fullest co-operation, whenever improvements were suggested. The proprietors, on account of their own intimate knowledge of their buildings, were apt to depreciate the possibility of danger to patrons who had not the same knowledge until the Inspectors called it to their attention. The Department wishes at this time to emphasize its appreciation of the willingness shown by proprietors and owners of places of amusement to carry out suggested improvements.

The number of this class of establishments is increasing in the State at approximately a rate of one a day. As plans for new buildings are submitted to the Department for approval, they are carefully examined. Proper seating arrangement, adequate exit facili-

ties, proper width of aisles and passageways, standard installation of motion picture machine booths for adequate fire protection, all these conditions are carefully looked into. Instances occur in which some of these points have not been given sufficient consideration by the architect. In these cases, the attention of the interested persons is called to the matters in question and suggestions are made by the Department experts, the endeavor being to suggest changes that shall make conditions conform to legal requirements.

SUMMARY TABLE OF ACCIDENTS REPORTED DURING 1914, BY CAUSE AND INJURY.

In considering the Accident Report for 1914, of the Department of Labor and Industry, a number of facts are brought out that are of great interest and value to those engaged in the furtherance of safety movements and the avoidance of accidents in the industrial life of the people of Pennsylvania. The total number of accidents reported for the year is 38,126; 34,625 of which are minor, 3,122 serious, and 379 fatal. For the purpose of this table, a serious accident is designated as one that causes a loss of a part of the body, or necessitates an absence of the injured person from employment during a period of three weeks or over. All other accidents which are not fatal are classed as minor.

The causes from which the greatest number of these reported accidents occur are: first, in hard labor, from being struck by falling material, a total of 7,577 accidents; from being caught between materials, a total of 3,777; second, from falling, slipping or tripping—on the ground level alone—a total of 2.149; third; from chips from material, a total of 1,947; fourth, from being caught or struck by moving machinery (other than cranes), a total of 1,711; fifth, from burns and scalds, a total of 1,635; sixth, in loading or unloading material in railroad work, a total of 1,615.

Taking these totals one by one, it is interesting to compare them with the number of the same accidents reported of minor character. Of the first total, 7,577, 7,069 were minor; of 3,777, 3,451 were minor; of 2,149, 1,993 were minor; of 1,947, 1,824 were minor; of 1,711, 1,359 were minor; of 1,635, 1,508 were minor; of 1,615, 1,488 were minor.

The nature of the occupation in which most of the accidents occur, and the very great proportion of accidents that are not serious, would lead to the supposition that a great number of these accidents arise from carelessness and could be avoided. The number of 2.149 accidents from falling on the ground level would seem unnecessary. They probably arise from the carelessness of a workman in allowing things to lie on the floors, thereby obstructing passageways; also from the lack of watchfulness on the part of the person injured.

In the grand totals there is a sum of 114 cases of blood poisoning, 82 of which arise from accidents in hand labor. Such cases would certainly point to a lack of careful attention at the time of the in-

jury. The present first aid methods and emergency hospital equipments should do away with any such results as blood poisoning from slight wounds.

The number of cases where one eye was lost is 25, 12 of which occurred because of chips from material. As workmen in our industries become educated to the vital necessity of wearing goggles, figures of such a nature will not exist. One hundred and twenty-six cases of the loss of a finger is another number that proper guarding of machinery and proper use of guards will lessen. From all causes, there were 379 fatal accidents; 54 of which were caused by falling from a height; 54 from being struck by falling material, and 30 because of accidents while working with cranes. The remaining fatal accidents were about evenly attributed to the other causes.

SUMMARY TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

Cause of Accident.	Injury.													
	Nature of Injury.								Loss of Parts.					
									Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	3	3	5	.....	.....	.....	.....	45	.....	.....	.....	.....	.....	.....
BURNS:														
Electric shocks (other than cranes),	174	10	11	7	.....	.....	.....	29	.....	.....	.....	.....	.....	.....
Hot metal, flue dust or flames,	1,462	50	35	7	.....	5	3	72	1	.....	.....	.....	.....	.....
Steam, hot water, acids, etc.,	533	11	15	2	.....	.....	1	16	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS. (Including gauge glass),	6	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS:														
Chips from tools,	8	15	104	3	.....	4	1	25	1	.....	.....	.....	.....	.....
Chips from material (flying objects),	189	197	1,023	35	.....	33	2	456	12	.....	.....	.....	.....	.....
CRANES:														
All accidents in connection with overhead cranes, shocks, burns, struck by, including handling of material,	22	395	256	130	2	4	1	8	1	.....	.....	.....	1	.....
All accidents in connection with locomotive cranes,	2	28	16	15	.....	4	.....	3	.....	.....	.....	.....	.....	.....
All accidents in connection with use of block and tackle,	1	26	25	10	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	7	4	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	1	62	24	29	.....	.....	1	1	.....	.....	.....	.....	.....	.....
EMERY WHEELS. All accidents at emery wheels,	19	50	146	2	.....	2	.....	168	.....	1	.....	.....	.....	.....
EXCAVATING,	.....	7	2	5	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
EXPLOSIONS. (Powder, dynamite, gas, dust, steam, etc.)	98	13	40	5	.....	2	.....	12	2	1	.....	.....	.....	.....
EYE. Foreign bodies in eye. (Not otherwise classified),	58	21	57	.....	.....	4	1	574	.....	.....	.....	.....	.....	.....
FALLING MATERIAL. (Other than by hand labor or hoisting),	2	32	19	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
FALLS,														
From ladder,	3	123	29	142	1	.....	.....	6	.....	.....	.....	.....	.....	.....
Into unprotected hole,	15	103	24	81	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Scaffolds,	1	94	32	79	.....	2	1	2	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	26	494	173	573	2	5	.....	15	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	91	741	384	889	12	10	1	20	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	2	20	38	20	.....	2	.....	2	1	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	2	6	7	4	.....	.....	.....	49	.....	.....	.....	.....	.....	.....

SUMMARY TABLE OF ACCIDENTS BY CAUSE AND INJURY. 1914—Continued.

Cause of Accident.	Injury.													
	Nature of Injury.								Loss of Parts.					
									Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
HAND LABOR:														
Caught between material,	16	2,083	1,295	313	.....	5	1	21	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	3	501	133	160	1	1	.....	3	.....	.....	.....	.....	.....	.....
Struck by falling material,	78	4,791	1,900	709	3	30	4	47	.....	.....	.....	.....	1	.....
Ran into, struck hand or part of body against something,	72	618	661	171	.....	27	15	12	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	13	1,422	1,096	288	.....	24	11	33	1	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	7	121	1,595	14	1	141	51	44	1	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	2	79	12	1,572	44	.....	.....	18	.....	.....	.....	.....	.....	.....
MACHINERY:														
Caught in or struck by moving machinery (other than cranes),	21	609	832	153	1	14	4	18	1	.....	2	.....	2	.....
Conveying machinery,	1	17	8	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	46	73	2	2	1	.....	.....	.....	.....	.....	.....	1	.....
Saws,	4	24	206	4	.....	2	.....	2	.....	.....	.....	.....	1	.....
Shears,	1	20	28	5	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	8	80	89	51	.....	1	1	5	.....	.....	1	.....	.....	.....
Struck by material in moving machinery (other than cranes),	44	103	148	39	.....	7	.....	3	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	29	26	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*MINING,	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS. Protruding,	1	63	322	5	.....	264	3	6	.....	.....	.....	.....	.....	.....
*RAILROADS. (Standard and narrow gauge):														
Collisions,	1	27	9	11	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	3	68	38	22	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Defective equipment,	.....	2	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	14	6	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	3	93	22	89	.....	1	.....	2	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	10	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	3	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....

Loading or unloading material,	7	923	396	248	1	9	1	22	4	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	5	117	56	54	.....	4	.....	16	.....	.....	.....	.....	.....	.....
Poling cars,	.....	9	1	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by car or engine,	2	65	8	51	.....	1	.....	1	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	2	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	1	21	4	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS:														
Animals and vehicles,	1	96	64	64	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
OTHER CAUSES,	5	35	27	18	3	5	10	51	.....	.....	.....	.....	1	.....
Total,	3,018	14,599	11,536	6,130	73	616	114	1,817	25	2	4	.....	7	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

SUMMARY TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914—Continued.

Cause of Accident.	Injury.														
	Loss of Parts.								Degree.						
	Fingers.		Legs.		Feet.		Toes.		Males.			Females.			
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	10	3	43	.....	.....	.....	56
BURNS:															
Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	16	18	197	.....	.....	.....	231
Hot metal, flue dust or flames,	.....	.....	.....	.....	.....	.....	.....	.....	9	118	1,506	.....	.....	2	1,635
Steam, hot water, acids, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	6	52	519	.....	.....	1	578
BOILER ACCIDENTS. (Including gauge glass),	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	.....	.....	.....	8
CHIPS:															
Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	154	.....	.....	.....	161
Chips from material (flying objects),	.....	.....	.....	.....	.....	.....	.....	.....	3	120	1,823	.....	.....	1	1,947
CRANES:															
All accidents in connection with overhead cranes, shocks, burns, struck by, including handling of material,	10	3	.....	.....	1	.....	1	.....	30	128	677	.....	.....	.....	835
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	3	19	46	.....	.....	.....	68
All accidents in connection with use of block and tackle,	1	.....	.....	.....	.....	.....	.....	.....	3	5	56	.....	.....	.....	64
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12	.....	.....	.....	13
ELEVATOR ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	15	20	79	1	.....	3	118
EMERY WHEELS. All accidents at emery wheels,	1	.....	.....	.....	.....	.....	.....	.....	1	14	374	.....	.....	.....	389
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	9	.....	.....	.....	15
EXPLOSIONS. (Powder, dynamite, gas, dust, steam, etc.)	.....	.....	.....	.....	.....	.....	.....	.....	16	35	121	.....	.....	1	173
EYE. Foreign bodies in eye. (Not otherwise classified),	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	704	.....	.....	.....	715
FALLING MATERIAL. (Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	57	.....	.....	.....	58
FALLS:															
From ladder,	.....	.....	.....	.....	.....	.....	.....	.....	3	62	238	.....	.....	1	304
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	.....	5	32	188	.....	.....	1	226
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	11	37	163	.....	.....	.....	211
Slipping or tripping (from above),	.....	.....	.....	.....	.....	.....	.....	.....	54	222	991	.....	6	15	1,288
Slipping or tripping (ground level),	1	.....	.....	.....	.....	.....	.....	.....	6	148	1,981	.....	2	12	2,149
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	.....	1	11	72	.....	1	.....	85
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	5	1	62	.....	.....	.....	68

HAND LABOR:															
Caught between material,	32	7	1	.....	.....	.....	2	1	17	307	3,437	.....	2	14	3,777
Hand truck or wheelbarrow,	.....	.....	.....	.....	.....	.....	1	.....	1	16	754	.....	.....	2	803
Struck by falling material,	8	4	1	.....	1	.....	.....	.....	54	451	7,054	1	2	15	7,577
Ran into, struck hand or part of body against something,	1	.....	.....	.....	.....	.....	3	1	2	71	1,501	.....	.....	7	1,581
Sledge, hammer, hatchet or hand tools,	4	.....	.....	.....	.....	.....	.....	.....	2	112	2,776	.....	.....	2	2,892
Slivers, sharp edges, etc.,	4	1	.....	.....	.....	.....	.....	1	2	63	1,890	.....	2	24	1,981
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	1	.....	.....	1	125	1,599	.....	.....	3	1,728
MACHINERY:															
Caught in or struck by moving machinery (other than cranes),	38	13	.....	.....	2	.....	1	.....	10	328	1,293	.....	14	66	1,711
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	2	5	20	.....	.....	1	28
Gears,	8	1	.....	.....	.....	.....	.....	.....	.....	34	92	.....	1	7	134
Saws,	10	7	.....	.....	.....	.....	.....	.....	2	53	204	.....	.....	1	260
Shears,	1	.....	.....	.....	.....	.....	.....	.....	.....	8	45	.....	1	2	56
Shafting, pulleys, belts, set screws, etc.,	1	1	.....	.....	.....	.....	.....	.....	16	44	176	.....	.....	2	238
Struck by material in moving machinery (other than cranes),	1	1	.....	.....	.....	.....	.....	.....	8	33	303	.....	.....	2	346
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	1	5	57	.....	.....	.....	63
*MINING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2
NAILS. Protruding,	.....	.....	.....	.....	.....	.....	.....	.....	1	21	640	.....	.....	2	664
*RAILROADS. (Standard and narrow gauge):															
Collisions.	.....	.....	.....	.....	.....	.....	.....	.....	3	8	38	.....	.....	.....	49
Coupling or uncoupling cars,	1	1	.....	.....	.....	.....	.....	.....	2	28	104	.....	.....	.....	134
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	.....	.....	.....	5
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	1	4	22	.....	.....	.....	27
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	2	21	187	.....	.....	.....	210
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	20	.....	.....	.....	22
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	.....	.....	.....	8
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	2
Loading or unloading material,	4	.....	.....	.....	.....	.....	.....	.....	7	120	1,487	.....	.....	1	1,615
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	3	20	229	.....	.....	.....	252
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	12	.....	.....	.....	13
Struck by car or engine,	.....	.....	1	.....	.....	.....	.....	.....	22	34	73	.....	.....	.....	129
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	2	1	2	.....	.....	.....	5
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	34	.....	.....	.....	36
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS:															
Animals and vehicles,	.....	.....	.....	.....	.....	.....	.....	.....	7	47	172	.....	1	.....	227
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
OTHER CAUSES,	1	.....	.....	.....	.....	.....	.....	.....	10	21	124	.....	.....	1	156
Total,	126	40	3	.....	4	1	7	4	377	3,090	34,437	2	32	188	38,126

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

DETAILED TABLES OF ALL REPORTED ACCIDENTS FOR 1914.

The following tables have been prepared to show in detail for each class of industry the cause of all accidents reported for that particular industry, and the nature of the injury received in each accident. By the use of these detailed tables, a great deal of information can be obtained as to which particular class of work is most dangerous, in the different industries. With this information at hand, all campaigns for accident prevention can be carried on more intelligently and with better chance for the reduction of accidents.

TABLE OF ACCIDENTS BY INJURY, ALL INDUSTRIES, 1914.

Industries.	Injury.												
	Nature of Injury.									Eyes.		Arms.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains, and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
Nursery Products—Plants and flowers,	.....	2	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering and laboratory service,	1	9	12	8	1	.....	.....	.....	1	.....	.....	.....	.....
Building trades,	35	282	234	149	.....	15	.....	5	25	.....	.....	.....	.....
Chemicals and allied products,	56	184	150	105	1	7	.....	3	21	.....	.....	.....	.....
Clay, glass and stone products,	48	308	483	131	2	10	.....	5	49	2	.....	.....	.....
Clothing manufacture,	2	19	16	14	.....	2	.....	.....	2	.....	.....	.....	.....
Food and kindred products,	19	89	104	44	.....	5	.....	1	11	.....	.....	.....	.....
Leather and rubber goods,	14	74	76	27	1	4	.....	1	2	.....	.....	.....	.....
Liquors and beverages,	1	12	14	12	.....	1	.....	.....	1	.....	.....	.....	.....
Lumber and its remanufacture,	2	67	148	27	.....	8	.....	.....	2	.....	.....	.....	.....
Paper and paper products,	20	135	84	45	.....	4	.....	1	7	.....	.....	.....	.....
Printing trades,	2	51	41	11	.....	1	.....	.....	1	.....	.....	.....	.....
Textiles,	18	118	163	60	.....	8	.....	5	9	1	.....	.....	.....
Miscellaneous products,	33	108	88	55	1	7	.....	2	10	.....	.....	.....	.....
Laundries,	4	5	2	2	.....	2	.....	.....	1	.....	.....	1	.....
Metals and metal products,	1,973	6,543	6,082	2,774	53	296	.....	75	975	19	.....	2	.....
Mines and quarries,*	33	205	327	93	.....	9	.....	.....	9	.....	1	.....	.....
Public service.*	755	6,371	3,564	2,567	14	237	.....	16	691	3	1	1	.....
Tobacco and its products,	1	11	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unclassified industries,	1	5	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	3,018	14,599	11,536	6,130	73	616	.....	114	1,817	25	2	4	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY INJURY, ALL INDUSTRIES, 1914—Continued.

Industries.	Injury.													
	Loss of Parts.										Degree.			
	Hands.		Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
Nursery Products—Plants and flowers,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	5	7
Engineering and laboratory service,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6	20	32
Building trades,	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	32	91	626	749
Chemicals and allied products,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	31	61	436	528
Clay, glass and stone products,	1	.....	2	3	.....	.....	.....	.....	1	1	38	109	899	1.046
Clothing manufacture,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	11	43	55
Food and kindred products,	.....	.....	1	1	.....	.....	.....	.....	.....	.....	1	45	229	275
Leather and rubber goods,	.....	.....	2	1	.....	.....	.....	.....	.....	.....	5	27	169	201
Liquors and beverages,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	31	41
Lumber and its remanufacture,	1	.....	3	2	.....	.....	.....	.....	.....	.....	8	58	195	261
Paper and paper products,	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	4	44	252	300
Printing trades,	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	27	84	111
Textiles,	.....	.....	4	1	.....	.....	.....	.....	.....	.....	11	66	309	386
Miscellaneous products,	2	.....	2	.....	.....	.....	.....	.....	.....	.....	12	48	249	309
Laundries,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	11	17
Metals and metal products,	2	.....	93	28	2	.....	4	.....	6	3	158	1,740	17,034	18.932
Mines and quarries,*	.....	.....	2	1	1	.....	.....	1	.....	.....	26	57	598	681
Public service,*	1	.....	5	1	.....	.....	.....	.....	.....	.....	42	709	13,416	14,167
Tobacco and its products,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	5	13	18
Unclassified industries,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	6	10
Total,	7	.....	126	40	3	.....	4	1	7	4	379	3,122	34,625	38,126

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

NURSERY PRODUCTS, PLANTS AND FLOWERS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),															
Hot metal, flue dust, or flames,															
Steam, hot water, acids, etc. (including gauge glass),															
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),			1												
CRANES—All accidents in connection with overhead cranes,															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle,															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,		1													
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(Other than by hand labor or hoisting),															
FALLS—From ladder,															
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),															
Slipping or tripping (ground level),															
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,															
Hand truck or wheelbarrow,															
Struck by falling material,		1		1											

Ran into, struck hand or part of body against something,															
Sledge, hammer, hatchet or hand tools,			1												
Slivers, sharp edges, etc.,															
Sprains, lifting or pulling,															
MACHINERY—Caught in or struck by moving machinery (other than cranes),			1												
Conveying machinery,															
Gears,															
Saws,															
Shears,															
Shafting, pulleys, belts, set screws, etc.,															
Struck by material in moving machinery (other than cranes),															
Machinery breaking,															
MINING.*															
NAILS—Protruding,															
RAILROADS*—(Standard and narrow gauge), Collisions,															
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,															
Fell from engine or car, or into car,															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,															
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,															
Laundry machines—Other than general,															
Quarrying,															
Other causes,															
Total,		2	4	1											

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

NURSERY PRODUCTS, PLANTS AND FLOWERS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc. (including gauge glass),												
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											1	1
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									1			1
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,												
Into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),												
Slipping or tripping (ground level),												
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,												
Hand truck or wheelbarrow,												
Struck by falling material,										1	1	2

Ran into, struck hand or part of body against something,											1	1
Siedge, hammer, hatchet or hand tools,											1	1
Slivers, sharp edges, etc.,												
Sprains, lifting or pulling,												
MACHINERY—Caught in or struck by moving machinery (other than cranes),											1	1
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shafting, pulleys, belts, set screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking,												
MINING.*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,												
Quarrying,												
Other causes,												
Total,									1	1	5	7

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

ENGINEERING AND LABORATORY SERVICE.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),		1													
Hot metal, flue dust, or flames,															
Steam, hot water, acids, etc. (including gauge glass),	1														
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),				1					1						
CRANES—All accidents in connection with overhead cranes,				1	1										
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,			1	2											
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),			1												
FALLING MATERIAL—(Other than by hand labor or hoisting),															
FALLS—From ladder,		1													
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),			2	3											
Slipping or tripping (ground level),				1											
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,		2													
Hand truck or wheelbarrow,															
Struck by falling material,		1	1												

Ran into, struck hand or part of body against something,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	3	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total,	1	9	11	9	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

ENGINEERING AND LABORATORY SERVICE—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),											1	1
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc. (including gauge glass),									1			1
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											2	2
CRANES—All accidents in connection with overhead cranes,											2	2
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									1	2		3
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),											1	1
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,									1			1
Into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),									1	3	1	5
Slipping or tripping (ground level),										1		1
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,											2	2
Hand truck or wheelbarrow,												
Struck by falling material,											2	2

Ran into, struck hand or part of body against something.											1	1
Sledge, hammer, hatchet or hand tools,											1	1
Slivers, sharp edges, etc.,											2	2
Sprains, lifting or pulling.												
MACHINERY—Caught in or struck by moving machinery (other than cranes),												
Conveying machinery.												
Gears,												
Saws.												
Shears,												
Shafting, pulleys, belts, set screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking,												
MINING.*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,									1			1
Men working on or under cars or climbing through trains,												
Poling cars.												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over.												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,									1		5	6
Laundry machines—Other than general,												
Quarrying.												
Other causes,												
Total,									6	6	20	32

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

BUILDING TRADES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION.									2						
BURNS—Electric shocks (other than cranes),	2								2						
Hot metal, flue dust, or flames.	15		3						2						
Steam, hot water, acids, etc. (including gauge glass).	13	1													
BOILER ACCIDENTS,	1														
CHIPS—Chips from tools.		1	1												
Chips from material (flying objects).		8	17			2			3						
CRANES—All accidents in connection with overhead cranes,		4	2												
All accidents in connection with locomotive cranes.			1												
All accidents in connection with the use of block and tackle,															
All accidents in connection with the use of winches,		1													
ELEVATOR ACCIDENTS,	1	2	2	2											
EMERY WHEELS—All accidents at emery wheels,			2												
EXCAVATING,				1											
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	1	1	1												
EYE—Foreign bodies in eye (not otherwise classified).									3						
FALLING MATERIAL—(Other than by hand labor or hoisting),	1	1													
FALLS—From ladder,		5		8											
Into unprotected hole,		4	1	2											
Scaffolds.		9	3	8					1						
Slipping or tripping (from above),		27	14	40					1						
Slipping or tripping (ground level),		7	12	40					1						
FIGHTING OR PLAYING,			1												
CRAMPS, OVERCOME WITH HEAT, ETC.,									1						
HAND LABOR—Caught between material,		37	17	7					1						
Hand truck or wheelbarrow,		2	1	4											
Struck by falling material,		98	51	24		2		1	1						

Ran into, struck hand or part of body against something,	.....	15	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	10	29	7	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	2	10	.....	.....	2	.....	3	1	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	8	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	4	11	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	1	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING.*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	1	4	24	.....	.....	8	.....	1	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	3	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	4	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	7	8	8	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	2	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Poling cars,	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	12	6	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total,	35	286	239	149	.....	15	.....	5	25	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

BUILDING TRADES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,											2	2
BURNS—Electric shocks (other than cranes),									1		3	4
Hot metal, flue dust, or flames,									1	1	18	20
Steam, hot water, acids, etc. (including gauge glass),											14	14
BOILER ACCIDENTS,									1			1
CHIPS—Chips from tools,											2	2
Chips from material (flying objects),										1	29	30
CRANES—All accidents in connection with overhead cranes,											6	6
All accidents in connection with locomotive cranes,									1			1
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,											1	1
ELEVATOR ACCIDENTS,									1		6	7
EMERY WHEELS—All accidents at emery wheels,											2	2
EXCAVATING,										1		1
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),											3	3
EYE—Foreign bodies in eye (not otherwise classified),											3	3
FALLING MATERIAL—(Other than by hand labor or hoisting),											2	2
FALLS—From ladder,										3	10	13
Into unprotected hole,									1		6	7
Scaffolds,										5	16	21
Slipping or tripping (from above),									9	22	51	82
Slipping or tripping (ground level),									1	1	28	30
FIGHTING OR PLAYING,											1	1
CRAMPS, OVERCOME WITH HEAT, ETC.,									1			1
HAND LABOR—Caught between material,	2								2	6	56	64
Hand truck or wheelbarrow,											7	7
Struck by falling material,									9	23	145	177

Ran into, struck hand or part of body against something,										1	18	19
Sledge, hammer, hatchet or hand tools,										1	46	47
Slivers, sharp edges, etc.,									1	3	14	18
Sprains, lifting or pulling,											9	9
MACHINERY—Caught in or struck by moving machinery (other than cranes),										4	13	17
Conveying machinery,											1	1
Gears.										1		1
Saws.										1	5	6
Shears,												
Shafting, pulleys, belts, set screws, etc.,											3	3
Struck by material in moving machinery (other than cranes),											1	1
Machinery breaking,											1	1
MINING,*												
NAILS—Protruding,										2	36	38
RAILROADS*—(Standard and narrow gauge), Collisions.											4	4
Coupling or uncoupling cars.	1									1	4	5
Defective equipment,												
Derailment and replacing cars,										2	5	7
Fell from engine or car, or into car,											1	1
Hand car accidents.											1	1
Holes or loose obstructions along track,												
Improperly loaded ladies or cars,												
Loading or unloading material.	1									4	21	25
Men working on or under cars or climbing through trains,									1	1	2	4
Poling cars.									1		2	3
Struck by car or engine,									1		1	2
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over.											1	1
Unlocked frogs or guard rails.												
MISCELLANEOUS—Animals and vehicles.										6	24	30
Laundry machines—Other than general,												
Quarrying,												
Other causes,										1	2	3
Total,	4								32	91	626	749

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CHEMICALS AND ALLIED PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, fine dust, or flames.	12	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc. (including gauge glass).	32	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools.	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects).	.....	.....	7	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes.	.....	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle.	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	8	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING.	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	2	1	2	1	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified).	.....	1	2	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder.	1	6	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Into unprotected hole,	2	2	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds.	.....	3	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above).	1	7	2	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level).	1	10	5	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC..	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	26	7	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow.	1	7	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	1	49	23	14	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	.....	12	5	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	6	10	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	.....	23	.....	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	12	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	7	15	3	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	1	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	1	3	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING.*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	2	10	.....	.....	5	.....	1	1	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge). Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	17	9	5	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	1	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	2	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	55	182	152	105	1	7	.....	3	21	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CHEMICALS AND ALLIED PRODUCTS.—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,											13	13
Steam, hot water, acids, etc. (including gauge glass),									2		32	34
BOILER ACCIDENTS,												
CHIPS—Chips from tools,											1	1
Chips from material (flying objects),											10	10
CRANES—All accidents in connection with overhead cranes,									2	1	1	4
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,											1	1
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									1	5	5	11
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,										1		1
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),									5	1	4	10
EYE—Foreign bodies in eye (not otherwise classified),											6	6
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,										1	9	10
Into unprotected hole,									1		8	9
Scaffolds,									1		4	5
Slipping or tripping (from above),									3	7	19	29
Slipping or tripping (ground level),										1	29	30
FIGHTING OR PLAYING,									1		2	3
CRAMPS, OVERCOME WITH HEAT, ETC.,									1		2	3
HAND LABOR—Caught between material,	1									6	36	42
Hand truck or wheelbarrow,										1	13	14
Struck by falling material,									3	9	76	88

Ran into, struck hand or part of body against something,									1	1	19	21
Stedge, hammer, hatchet or hand tools,										2	17	19
Slivers, sharp edges, etc.,										2	24	26
Sprains, lifting or pulling,									1	2	10	13
MACHINERY—Caught in or struck by moving machinery (other than cranes),										7	21	28
Conveying machinery,											2	2
Gears,											2	2
Saws,									1	2	3	6
Shears,												
Shafting, pulleys, belts, set screws, etc.,									1	3	3	7
Struck by material in moving machinery (other than cranes),											4	4
Machinery breaking,										1	1	2
MINING,*												
NAILS—Protruding,									1	2	16	19
RAILROADS*—(Standard and narrow gauge). Collisions,												
Coupling or uncoupling cars,												
Defective equipment,											1	1
Derailment and replacing cars,									1			1
Fell from engine or car, or into car,										2	1	3
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,									1	1	30	32
Loading or unloading material,											3	3
Men working on or under cars or climbing through trains,												
Poling cars,									1	2	2	5
Struck by car or engine,												
Struck by overhead or side obstructions,											1	1
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,									1	1	4	6
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,									1	1		2
Quarrying,												
Other causes,												
Total,	1								30	62	435	527

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CLAY, GLASS AND STONE PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	7	.....	.....	1	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	19	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc. (including gauge glass),	10	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	3	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	4	4	21	.....	.....	2	.....	.....	12	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	4	5	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	4	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	5	1	6	3	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	1	.....	.....	.....	.....	.....	14	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	5	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	.....	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	14	3	12	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	12	16	17	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	46	28	9	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	9	10	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	1	100	73	26	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	.....	12	16	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	13	23	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	2	178	.....	.....	2	.....	5	2	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	1	1	8	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	14	31	4	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Saws,	1	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	1	10	7	6	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING.*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	5	4	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge). Collisions,	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	3	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	2	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	18	23	8	1	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	6	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	4	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	48	308	482	131	2	11	.....	5	49	2	.....	.....	.....	1	.....

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CLAY, GLASS AND STONE PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,									2			2
BURNS—Electric shocks (other than cranes),									3		8	11
Hot metal, flue dust, or flames,										1	19	20
Steam, hot water, acids, etc. (including gauge glass),										1	10	11
BOILER ACCIDENTS,												
CHIPS—Chips from tools,											5	5
Chips from material (flying objects),										4	39	43
CRANES—All accidents in connection with overhead cranes,										1	10	11
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,									1		2	3
All accidents in connection with the use of winches,											1	1
ELEVATOR ACCIDENTS,									2	1	7	10
EMERY WHEELS—All accidents at emery wheels,											3	3
EXCAVATING,										1		1
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),									3	3	12	18
EYE—Foreign bodies in eye (not otherwise classified),										1	14	15
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,									1	3	5	9
Into unprotected hole,									1	3	1	5
Scaffolds,											2	2
Slipping or tripping (from above),									5	3	22	30
Slipping or tripping (ground level),										3	43	46
FIGHTING OR PLAYING,											5	5
CRAMPS, OVERCOME WITH HEAT, ETC.,											1	1
HAND LABOR—Caught between material,	1	1					1	1		17	71	88
Hand truck or wheelbarrow,										3	23	26
Struck by falling material,		1							7	21	176	204

Ran into, struck hand or part of body against something,											30	30
Sledge, hammer, hatchet or hand tools,										1	39	40
Slivers, sharp edges, etc.,										5	184	189
Sprains, lifting or pulling,										1	11	12
MACHINERY—Caught in or struck by moving machinery (other than cranes),		1							2	10	40	52
Conveying machinery,										1	1	2
Gears,	1									2		2
Saws,									1		6	7
Shears,										1	1	2
Shafting, pulleys, belts, set screws, etc.,									4	6	15	25
Struck by material in moving machinery (other than cranes),											2	2
Machinery breaking,											1	1
MINING,*												
NAILS—Protruding,											13	13
RAILROADS*—(Standard and narrow gauge), Collisions,									1	1	1	3
Coupling or uncoupling cars,										2	3	5
Defective equipment,												
Derailment and replacing cars,											7	7
Fell from engine or car, or into car,									1	3	2	6
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,									1	6	45	52
Men working on or under cars or climbing through trains,											1	1
Poling cars,											2	2
Struck by car or engine,									2	3	5	10
Struck by overhead or side obstructions,									1		1	2
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1	8	9
Laundry machines—Other than general,												
Quarrying,												
Other causes,											2	2
Total,	2	3					1	1	38	109	899	1,046

*Does not include accidents reported to the Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CLOTHING MANUFACTURE.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION.															
BURNS—Electric shocks (other than cranes),															
Hot metal, flue dust, or flames,	2														
Steam, hot water, acids, etc., (including gauge glass),															
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),															
CRANES—All accidents in connection with overhead cranes.															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle,															
All accidents in connectioo with the use of winches,															
ELEVATOR ACCIDENTS,		1		2											
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(Other than by hand labor or hoisting).															
FALLS—From ladder,				2											
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),		3		3											
Slipping or tripping (ground level),		3		3											
FIGHTING OR PLAYING,									1						
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,															
Hand truck or wheelbarrow,		1		2											
Struck by falling material,															

Ran into, struck hand or part of body against something,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	8	10	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set-screws, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	2	19	16	14	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

CLOTHING MANUFACTURE—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc., (including gauge glass),											2	2
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),												
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,												
EMERY WHEELS—All accidents at emery wheels,									1		2	3
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,												
Into unprotected hole,										2		2
Scaffolds,												
Slipping or tripping (from above),												
Slipping or tripping (ground level),										2	4	6
FIGHTING OR PLAYING,										2	4	6
CRAMPS, OVERCOME WITH HEAT, ETC.,											1	1
HAND LABOR—Caught between material,												
Hand truck or wheelbarrow,												
Struck by falling material,										1	2	3

Ran into, struck hand or part of body against something,												
Sledge, hammer, hatchet or hand tools,											1	1
Slivers, sharp edges, etc.,											5	5
Sprains, lifting or pulling,												
MACHINERY—Caught in or struck by moving machinery (other than cranes),										2	18	20
Conveying machinery,												
Gears,												
Saws,											1	1
Shears,												
Shafting, pulleys, belts, set-screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking.												
MINING,*												
NAILS—Protruding,											2	2
RAILROADS*—(Standard and narrow gauge), Collisions,										1		1
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1	1	2
Laundry machines—Other than general,												
Quarrying,												
Other causes,												
Total,									1	11	43	55

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

FOOD AND KINDRED PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	12	2	1	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	7	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	1	7	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	7	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	7	1	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by falling material,	1	14	10	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	1	5	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	.....	13	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	2	16	.....	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	19	30	3	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	6	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set-screws, etc.,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	3	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	6	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	8	2	7	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total,	19	89	104	44	.....	5	.....	1	11	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

FOOD AND KINDRED PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
Hot metal, flue dust, or flames,	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	13	17
Steam, hot water, acids, etc., (including gauge glass).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Chips from material (flying objects),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
CRANES—All accidents in connection with overhead cranes.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle.	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	6	9
All accidents in connection with the use of winches.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
EMERY WHEELS—All accidents at emery wheels.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
EXCAVATING.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified).	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	3	5
FALLING MATERIAL—(Other than by hand labor or hoisting).	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
FALLS—From ladder,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	3
Scaffolds.	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12	13
Slipping or tripping (from above),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4
Slipping or tripping (ground level),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	10	12
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	10
HAND LABOR—Caught between material.	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	28	30
Hand truck or wheelbarrow,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,											10	10
Sledge, hammer, hatchet or hand tools,										2	12	14
Slivers, sharp edges, etc.,											22	22
Sprains, lifting or pulling,											8	8
MACHINERY—Caught in or struck by moving machinery (other than cranes),		1								15	40	55
Conveying machinery,											1	1
Gears,											1	1
Saws,	1									1	7	8
Shears,												
Shafting, pulleys, belts, set-screws, etc.,										1	1	2
Struck by material in moving machinery (other than cranes),											2	2
Machinery breaking,											1	1
MINING,*												
NAILS—Protruding,											5	5
RAILROADS*—(Standard and narrow gauge), Collisions,										1	1	2
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,										1	10	11
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,									1			1
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,										6	12	18
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,												
Quarrying,											1	1
Other causes,												
Total,	1	1							1	45	229	275

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LEATHER AND RUBBER GOODS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	7	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes.	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	2	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	1	1	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material.	.....	7	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	.....	18	5	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	1	1	11	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	2	13	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	27	30	4	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set-screws, etc.,	1	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Total,	14	74	76	27	.....	4	.....	1	2	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LEATHER AND RUBBER GOODS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),											1	1
Hot metal, flue dust, or flames,										1	3	4
Steam, hot water, acids, etc., (including gauge glass),											8	8
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											1	1
CRANES—All accidents in connection with overhead cranes,											1	1
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,											3	3
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),											1	1
FALLS—From ladder,										1	1	2
Into unprotected hole,									1	1		2
Scaffolds,												
Slipping or tripping (from above),									1	3	4	8
Slipping or tripping (ground level),										1	9	10
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,										1	13	14
Hand truck or wheelbarrow,											4	4
Struck by falling material,										4	22	26

Ran into, struck hand or part of body against something,											4	4
Sledge, hammer, hatchet or hand tools.										2	12	14
Slivers, sharp edges, etc.,											16	16
Sprains, lifting or pulling,											2	2
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	1							1	11	54	66
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shafting, pulleys, belts, set-screws, etc.,									1	1	2	4
Struck by material in moving machinery (other than cranes).												
Machinery breaking,												
MINING.*												
NAILS—Protruding,											3	3
RAILROADS*—(Standard and narrow gauge), Collisions.												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,											3	3
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,									1			1
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,												
Quarrying,												
Other causes,	1									1	1	2
Total,	2	1							5	27	169	201

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LIQUORS AND BEVERAGES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	2	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	.....	5	4	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,			1												
Sledge, hammer, hatchet or hand tools,															
Slivers, sharp edges, etc.,			4			1									
Sprains, lifting or pulling,				1											
MACHINERY—Caught in or struck by moving machinery (other than cranes),		1	1												
Conveying machinery,															
Gears,															
Saws,															
Shears,															
Shafting, pulleys, belts, set-screws, etc.,															
Struck by material in moving machinery (other than cranes).															
Machinery breaking,															
MINING,*															
NAILS—Protruding,															
RAILROADS*—(Standard and narrow gauge), Collisions,															
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,															
Fell from engine or car, or into car,															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,															
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,		1		1											
Laundry machines—Other than general,															
Quarrying,															
Other causes,															
Total,	1	12	14	12		1			1						

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LIQUORS AND BEVERAGES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc., (including gauge glass),											1	1
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											1	1
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									1			1
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),											1	1
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,										1		1
Into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),										1	1	2
Slipping or tripping (ground level),										2	3	5
FIGHTING OR PLAYING,											1	1
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,											4	4
Hand truck or wheelbarrow,											1	1
Struck by falling material,										2	10	12

Ran into, struck hand or part of body against something,											1	1
Sledge, hammer, hatchet or hand tools,												
Slivers, sharp edges, etc.,										1	4	5
Sprains, lifting or pulling,											1	1
MACHINERY—Caught in or struck by moving machinery (other than cranes),										1	1	2
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shafting, pulleys, belts, set-screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking,												
MINING,*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1	1	2
Laundry machines—Other than general,												
Quarrying,												
Other causes,												
Total,									1	9	31	41

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LUMBER AND ITS REMANUFACTURE.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),															
Hot metal, fine dust, or flames,	1														
Steam, hot water, acids, etc., (including gauge glass),	1		1												
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),		3	8												
CRANES—All accidents in connection with overhead cranes.			2												
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle,															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,		2													
EMERY WHEELS—All accidents at emery wheels,		1													
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),			1												
FALLING MATERIAL—(Other than by hand labor or hoisting),															
FALLS—From ladder,		1		2											
Into unprotected hole,		1													
Scaffolds,		1	1	1											
Slipping or tripping (from above),		4	2	4											
Slipping or tripping (ground level),		2	2						1						
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,		9	5	3											
Hand truck or wheelbarrow,		2													
Struck by falling material,		9	5	5										1	

Ran into, struck hand or part of body against something,		2	3	1											
Sledge, hammer, hatchet or hand tools,		3	8												
Slivers, sharp edges, etc.,		1	7			6			1						
Sprains, lifting or pulling,				2	1										
MACHINERY—Caught in or struck by moving machinery (other than cranes),		6	45	3		1									
Conveying machinery,			1												
Gears,			5												
Saws,		6	47												
Shears,															
Shafting, pulleys, belts, set-screws, etc.,		3	2	3											
Struck by material in moving machinery (other than cranes),		1	2	1											
Machinery breaking,															
MINING.*															
NAILS—Protruding,						1									
RAILROADS*—(Standard and narrow gauge), Collisions,		1													
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,		1													
Fell from engine or car, or into car,															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,		5		1											
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,		3		1											
Laundry machines—Other than general,															
Quarrying,		1													
Other causes,															
Total,	2	67	148	27	1	8			2					1	

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LUMBER AND ITS REMANUFACTURE—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,											1	1
Steam, hot water, acids, etc., (including gauge glass),											2	2
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),										1	10	11
CRANES—All accidents in connection with overhead cranes,									1	1		2
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,											2	2
EMERY WHEELS—All accidents at emery wheels,											1	1
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),											1	1
FALLING MATERIAL—(Othe than by haud labor or hoisting),												
FALLS—From ladder,											3	3
Into unprotected hole,											1	1
Scaffolds,										2	1	3
Slipping or tripping (from above),									1	5	4	10
Slipping or tripping (ground level),											5	5
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,									1	1	15	17
Hand truck or wheelbarrow,										1	1	2
Struck by falling material,									2	6	12	20

Ran into, struck hand or part of body against something,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	6
Sledge, hammer, hatchet or hand tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	9	11
Slivers, sharp edges, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	15
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	3
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	1	.....	.....	.....	.....	.....	.....	1	20	36	57
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Gears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5
Saws,	2	1	.....	.....	.....	.....	.....	.....	.....	13	43	56
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set-screws, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	8
Struck by material in moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	3	4
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	4
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	3	2	.....	.....	.....	.....	.....	.....	8	58	195	261

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PAPER AND PAPER PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc. (including gauge glass),	7	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes.	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	5	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	1	7	1	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	4	6	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	13	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	3	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	1	17	8	7	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	.....	2	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	4	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	1	3	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	3	51	32	5	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	1	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	6	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	20	135	84	45	.....	4	.....	1	7	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PAPER AND PAPER PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												4
BURNS—Electric shocks (other than cranes),											2	2
Hot metal, flue dust, or flames,											5	5
Steam, hot water, acids, etc. (including gauge glass),										2	7	9
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											2	2
CRANES—All accidents in connection with overhead cranes,											1	1
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,										2	4	6
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),											1	1
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(other than by hand labor or hoisting),												
FALLS—From ladder,										1	2	3
Into unprotected hole,											2	2
Scaffolds,											2	
Slipping or tripping (from above),										3	11	14
Slipping or tripping (ground level),											17	17
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,										2	21	23
Hand truck or wheelbarrow,										2	5	7
Struck by falling material,									1	1	33	35

Ran into, struck hand or part of body against something,										2	8	10
Sledge, hammer, hatchet or hand tools,											13	13
Slivers, sharp edges, etc.,										1	4	5
Sprains, lifting or pulling,										1	2	3
MACHINERY—Caught in or struck by moving machinery (other than cranes),	2								2	17	78	97
Conveying machinery,												
Gears,										1		1
Saws,	2									2	4	6
Shears,												
Shafting, pulleys, belts, set screws, etc.,									1	3	5	9
Struck by material in moving machinery (other than cranes),											4	4
Machinery breaking,											1	1
MINING,*												
NAILS—Protruding,											5	5
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,											2	2
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,											2	2
Hand car accidents,												
Holes, or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,										2	8	10
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1	1	2
Laundry machines—other than general,												
Quarrying,												
Other causes,										1		1
Total,	4								4	44	252	300

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PRINTING TRADES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),															
Hot metal, flue dust, or flames,	2														
Steam, hot water, acids, etc. (including gauge glass),															
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),			1												
CRANES—All accidents in connection with overhead cranes,															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,		2	1												
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(other than by hand labor or hoisting),									1						
FALLS—From ladder,															
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),				1											
Slipping or tripping (ground level),				3											
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,		5	3	1											
Hand truck or wheelbarrow,															
Struck by falling material,		6	3	1											

Ran into, struck hand or part of body against something,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	33	20	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING.*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	2	51	41	11	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PRINTING TRADES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),											2	2
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc. (including gauge glass),												
BOILER ACCIDENTS,												
CHIPS—Chips from tools,											1	1
Chips from material (flying objects),												
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,										1	2	3
ELEVATOR ACCIDENTS,												
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(other than by hand labor or hoisting),											1	1
FALLS—From ladder,												
Into unprotected hole,												
Scaffolds,										1		1
Slipping or tripping (from above),										2	1	3
Slipping or tripping (ground level),												
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,										1	8	9
HAND LABOR—Caught between material,												
Hand truck or wheelbarrow,											10	10
Struck by falling material,												

Ran into, struck hand or part of body against something,										1		1
Sledge, hammer, hatchet or hand tools,											4	4
Slivers, sharp edges, etc.,										1	2	3
Sprains, lifting or pulling,											1	1
MACHINERY—Caught in or struck by moving machinery (other than cranes),	3	1								18	43	61
Conveying machinery,										1		1
Gears,											2	2
Saws,											5	5
Shears,												
Shafting, pulleys, belts, set screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking,											1	1
MINING,*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,											1	1
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1		1
Laundry machines—other than general,												
Quarrying,												
Other causes,												
Total,	3	1								27	84	111

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

TEXTILES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc. (including gauge glass),	10	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	1	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with block and tackle,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	6	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	2	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	7	1	9	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	8	6	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	6	3	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	.....	21	15	7	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	.....	2	4	2	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	.....	1	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	.....	15	.....	.....	4	.....	3	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	39	77	13	.....	2	.....	1	2	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	10	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	4	8	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total,	18	118	163	60	.....	8	.....	5	9	.....	.....	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

TEXTILES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,											5	5
Steam, hot water, acids, etc. (including gauge glass),										3	8	11
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),										1	3	4
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with block and tackle,											1	1
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS.										1	8	9
EMERY WHEELS—All accidents at emery wheels,											1	1
EXCAVATING,												
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),										1		1
EYE—Foreign bodies in eye (not otherwise classified),											2	2
FALLING MATERIAL—(other than by hand labor or hoisting).												
FALLS—From ladder.										3	3	6
Into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),									2	5	13	20
Slipping or tripping (ground level),										5	17	22
FIGHTING OR PLAYING,										3	1	4
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,										1	13	14
Hand truck or wheelbarrow,											2	2
Struck by falling material,									3	6	35	44

Ran into, struck hand or part of body against something,									1		9	10
Sledge, hammer, hatchet or hand tools,											7	7
Slivers, sharp edges, etc.,	1									3	20	23
Sprains, lifting or pulling,												
MACHINERY—Caught in or struck by moving machinery (other than cranes),	2								2	23	112	137
Conveying machinery,												
Gears,										4	20	24
Saws,		1								1	3	4
Shears,											2	2
Shafting, pulleys, belts, set screws, etc.,									1	3	14	18
Struck by material in moving machinery (other than cranes),	1								1	1		2
Machinery breaking,												
MINING,*												
NAILS—Protruding,											3	3
RAILROADS*—(Standard and narrow gauge). Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,										1	3	4
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,										1	2	3
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—other than general,												
Quarrying,									1		2	3
Other causes,												
Total,	4	1							11	66	309	386

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

MISCELLANEOUS PRODUCTS.

Cause of Accident.	Injury														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	11	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc. (including gauge glass),	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	1	1	5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes.	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in conuection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	6	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	3	1	3	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Into unprotected hole,	1	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	1	7	2	6	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	1	2	2	6	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	.....	11	7	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	1	1	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by falling material,	2	34	7	12	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	1	1	3	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools.	.....	3	1	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	.....	1	15	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	2	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	.....	16	17	4	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	2	10	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Shears,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	.....	2	8	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	2	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), Collisions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	1	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	2	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total,	33	109	88	55	1	7	.....	2	10	.....	.....	.....	.....	2	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

MISCELLANEOUS PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),										1		1
Hot metal, flue dust, or flames,										2	11	13
Steam, hot water, acids, etc. (including gauge glass),										1	9	10
BOILER ACCIDENTS,											1	1
CHIPS—Chips from tools,												
Chips from material (flying objects),										2	6	8
CRANES—All accidents in connection with overhead cranes,											1	1
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									3	1	7	11
EMERY WHEELS—All accidents at emery wheels,											2	2
EXCAVATING,												
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),									1	2	1	4
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(other than by hand labor or hoisting),												
FALLS—From ladder,										1	8	9
Into unprotected hole,										3	1	4
Scaffolds,											3	3
Slipping or tripping (from above),									2	3	12	17
Slipping or tripping (ground level),										1	11	12
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,	1									4	17	21
Hand truck or wheelbarrow,										1	4	5
Struck by falling material,										4	52	56

Ran into, struck hand or part of body against something,										2	4	6
Sledge, hammer, hatchet or hand tools,											6	6
Slivers, sharp edges, etc.,										1	17	18
Sprains, lifting or pulling,										2	7	9
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1									7	35	42
Conveying machinery,												
Gears,											1	1
Saws,										4	9	13
Shears,												
Shafting, pulleys, belts, set screws, etc.,									4	1	8	13
Struck by material in moving machinery (other than cranes),										1		1
Machinery breaking,										1		1
MINING,*												
NAILS—Protruding,											4	4
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,									1		4	5
Men working on or under cars or climbing through trains,											2	2
Poling cars,												
Struck by car or engine,										1	1	2
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,										1	5	6
Laundry machines—other than general,												
Quarrying,												
Other causes,									1	1		2
Total,	2								12	48	249	309

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LAUNDRIES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),															
Hot metal, flue dust, or flames,	1														
Steam, hot water, acids, etc. (including gauge glass),	2														
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),															
CRANES—All accidents in connection with overhead cranes,															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle,															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,															
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(other than by hand labor or hoisting),															
FALLS—From ladder,															
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),		1		1											
Slipping or tripping (ground level),															
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,		1													
Hand truck or wheelbarrow,															
Struck by falling material,		1				1									

Ran into, struck hand or part of body against something				1											
Sledge, hammer, hatchet or hand tools,															
Slivers, sharp edges, etc.,						1									
Sprains, lifting or pulling,															
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	2	2									1			
Conveying machinery,															
Gears,															
Saws,															
Shears,															
Shafting, pulleys, belts, set screws, etc.,															
Struck by material in moving machinery (other than cranes).															
Machinery breaking,															
MINING.*															
NAILS—Protruding,															
RAILROADS*—(Standard and narrow gauge), Collisions,															
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,															
Fell from engine or car, or into car.															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars.															
Loading or unloading material,															
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles.									1						
Laundry machines—other than general,															
Quarrying.															
Other causes,															
Total,	4	5	2	2		2			1			1			

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

LAUNDRIES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,											1	1
Steam, hot water, acids, etc. (including gauge glass),											2	2
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),												
CRANES—All accidents in connection with overhead cranes.												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,												
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(other than by hand labor or hoisting),												
FALLS—From ladder,												
into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),										1	1	2
Slipping or tripping (ground level),												
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,											1	1
Hand truck or wheelbarrow,												
Struck by falling material,											2	2

Ran into, struck hand or part of body against something,										1		1
Sledge, hammer, hatchet or hand tools.												
Slivers, sharp edges, etc.,											1	1
Sprains, lifting or pulling,												
MACHINERY—Caught in or struck by moving machinery (other than cranes),										3	3	6
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shaftiug, pulleys, belts, set screws, etc.,												
Struck by material iu moving machinery (other than cranes),												
Machinery breaking.												
MINING,*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,									1			1
Laundry machines—other than general,												
Quarrying,												
Other causes,												
Total,									1	5	11	17

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY. 1914

METALS AND METAL PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	2	3	5	.....	.....	.....	.....	....	37	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	124	3	7	3	.....	.....	.....	....	18	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	1,053	34	22	3	.....	3	.....	3	53	1	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	212	4	4	1	.....	.....	.....	....	7	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	3	.....	1	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	8	9	44	1	.....	2	.....	1	14	1	.....	.....	.....	.....	.....
Chips from material (flying objects),	103	92	441	22	.....	21	.....	1	186	10	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	22	338	226	119	.....	4	.....	1	7	1	.....	.....	.....	1	.....
All accidents in connection with locomotive cranes,	2	24	15	14	.....	4	.....	....	2	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	19	20	9	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	3	2	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	12	8	7	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	15	33	95	1	.....	1	.....	....	119	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	5	1	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	66	6	17	1	.....	2	.....	....	5	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	44	5	37	.....	.....	2	.....	....	302	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	1	26	17	3	.....	1	.....	....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	49	13	53	1	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	9	38	17	28	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	1	48	11	46	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	16	190	89	220	2	3	.....	....	7	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	81	310	220	368	9	5	.....	1	10	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	1	11	16	15	.....	2	.....	....	.....	1	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	2	1	5	1	.....	.....	.....	....	42	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	13	971	767	181	.....	3	.....	....	7	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	2	196	80	64	.....	1	.....	1	1	.....	.....	.....	.....	.....	.....
Struck by falling material,	57	2,328	1,115	445	3	19	.....	2	25	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	42	275	412	79	.....	19	.....	12	7	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	7	471	390	127	.....	9	.....	10	14	1	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	6	72	899	14	1	73	.....	33	25	.....	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	2	37	7	642	29	.....	.....	.....	11	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	14	303	417	85	1	5	.....	1	4	.....	.....	.....	.....	.....	.....
Conveying machinery,	1	6	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	22	40	1	2	1	.....	.....	.....	.....	.....	.....	.....	1	.....
Saws,	2	7	91	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shears,	1	10	16	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	3	32	48	24	.....	1	.....	1	3	.....	.....	1	.....	.....	.....
Struck by material in moving machinery (other than cranes),	42	74	112	30	.....	6	.....	.....	3	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	18	18	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	18	118	3	.....	99	.....	1	3	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), collisions,	.....	10	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	1	37	22	8	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Defective equipment,	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	3	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	1	19	7	19	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	4	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	6	272	136	67	.....	3	.....	.....	13	4	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	1	20	5	11	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Poling cars,	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by car or engine,	1	36	13	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	4	2	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	14	6	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	5	20	19	11	3	4	.....	7	44	.....	.....	.....	.....	.....	.....
Total,	1,973	6,543	6,082	2,774	53	296	.....	76	975	19	.....	2	.....	2	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

METALS AND METAL PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	.....	6	3	38	47
BURNS—Electric shocks (other than cranes),	.....	.....	.....	.....	.....	.....	.....	.....	8	7	140	155
Hot metal, flue dust, or flames,	.....	.....	.....	.....	.....	.....	.....	.....	6	98	1,068	1,172
Steam, hot water, acids, etc., (including gauge glass),	.....	.....	.....	.....	.....	.....	.....	.....	3	24	201	228
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	4
CHIPS—Chips from tools,	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	73	80
Chips from material (flying objects),	.....	.....	.....	.....	.....	.....	.....	.....	1	66	809	876
CRANES—All accidents in connection with overhead cranes,	10	3	.....	.....	1	.....	.....	1	26	120	588	734
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	.....	3	18	40	61
All accidents in connection with the use of block and tackle,	1	.....	.....	.....	.....	.....	.....	.....	1	5	44	50
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	5
ELEVATOR ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	.....	3	4	20	27
EMERY WHEELS—All accidents at emery wheels,	1	.....	.....	.....	.....	.....	.....	.....	1	12	252	265
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	6
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	.....	.....	.....	.....	.....	.....	.....	.....	3	22	72	97
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	383	390
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	47	48
FALLS—From ladder,	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	89	116
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	.....	1	12	79	92
Scaffolds,	.....	.....	.....	.....	.....	.....	.....	.....	9	23	77	109
Slipping or tripping (from above),	.....	.....	.....	.....	.....	.....	.....	.....	22	106	399	527
Slipping or tripping (ground level),	1	.....	.....	.....	.....	.....	.....	.....	1	77	927	1,005
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	38	46
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	48	51
HAND LABOR—Caught between material,	24	5	1	.....	.....	.....	1	.....	7	194	1,172	1,973
Hand truck or wheelbarrow,	.....	.....	.....	.....	.....	.....	1	.....	1	19	326	346
Struck by falling material,	8	2	1	.....	1	.....	3	1	26	284	3,702	4 007

Ran into, struck hand or part of body against something,	1	.....	.....	.....	.....	.....	.....	.....	.....	31	816	847
Sledge, hammer, hatchet or hand tools,	4	.....	.....	.....	.....	.....	.....	.....	.....	63	970	1,033
Slivers, sharp edges, etc.,	3	1	.....	.....	.....	.....	.....	1	1	37	1,090	1,128
Sprains, lifting or pulling,	.....	.....	.....	.....	.....	.....	.....	.....	.....	58	670	728
MACHINERY—Caught in or struck by moving machinery (other than cranes),	27	8	.....	.....	2	.....	1	.....	1	175	692	868
Conveying machinery,	.....	.....	.....	.....	.....	.....	.....	.....	2	2	7	11
Gears,	6	1	.....	.....	.....	.....	.....	.....	.....	26	48	74
Saws,	5	4	.....	.....	.....	.....	.....	.....	.....	22	92	114
Shears,	1	.....	.....	.....	.....	.....	.....	.....	.....	5	25	30
Shafting, pulleys, belts, set screws, etc.,	1	1	.....	.....	.....	.....	.....	.....	4	22	89	115
Struck by material in moving machinery (other than cranes),	.....	1	.....	.....	.....	.....	.....	.....	4	25	239	268
Machinery breaking,	.....	.....	.....	.....	.....	.....	.....	.....	1	2	39	42
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
NAILS—Protruding,	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	233	242
RAILROADS*—(Standard and narrow gauge), collisions,	.....	.....	.....	.....	.....	.....	.....	.....	1	1	12	14
Coupling or uncoupling cars,	.....	1	.....	.....	.....	.....	.....	.....	1	16	53	70
Defective equipment,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
Derailment and replacing cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	6
Fell from engine or car, or into car,	.....	.....	.....	.....	.....	.....	.....	.....	1	2	44	47
Hand car accidents,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	6	7
Holes or loose obstructions along track,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Loading or unloading material,	2	.....	.....	.....	.....	.....	.....	.....	2	52	449	503
Men working on or under cars or climbing through trains,	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	36	41
Poling cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
Struck by car or engine,	.....	.....	.....	.....	.....	.....	.....	.....	9	15	40	64
Struck by overhead or side obstructions,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	10
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	.....	.....	.....	.....	.....	.....	.....	1	6	23	30
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	1	.....	.....	.....	.....	.....	.....	5	14	95	114
Total,	95	28	2	.....	4	.....	6	3	158	1,740	17,033	18,931

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

MINES AND QUARRIES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	.....	.....	.....	.....	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	6	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	13	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	2	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	.....	2	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	1	7	56	3	.....	3	.....	....	3	.....	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	1	1	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	2	.....	2	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EXCAVATING,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	7	4	9	.....	.....	.....	.....	....	.....	.....	1	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	.....	.....	3	.....	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	.....	.....	.....	2	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Into unprotected hole,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	.....	1	1	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	.....	5	6	10	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	.....	9	18	10	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	.....	1	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	1	23	29	3	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	1	.....	2	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	1	72	54	16	.....	1	.....	....	1	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,		3	4			1									
Sledge, hammer, hatchet or hand tools,			35	1											
Slivers, sharp edges, etc.,			18												
Sprains, lifting or pulling,				13					1						
MACHINERY—Caught in or struck by moving machinery (other than cranes),		5	4	2											
Conveying machinery,		1													
Gears,		1													
Saws,			2												
Shears,															
Shafting, pulleys, belts, set screws, etc.,		2	1	1											
Struck by material in moving machinery (other than cranes),															
Machinery breaking,															
MINING,*															
NAILS—Protruding,		1	1			4									
RAILROADS*—(Standard and narrow gauge), collisions,			2	1											
Coupling or uncoupling cars,	1	4	5	1											
Defective equipment,									1						
Derailment and replacing cars,			3	1											
Fell from engine or car, or into car,		2	1												
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,		27	60	6											
Men working on or under cars or climbing through trains,		2	1												
Poling cars,		1		1											
Struck by car or engine,		1	5	2					1						
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,		1													
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,	1	21	7	12											
Laundry machines—Other than general,															
Quarrying,															
Other causes,															
Total,	33	205	327	90		9			9		1				

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914

MINES AND QUARRIES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,											1	1
BURNS—Electric shocks (other than cranes),									1		5	6
Hot metal, flue dust, or flames,										1	12	13
Steam, hot water, acids, etc., (including gauge glass),											2	2
BOILER ACCIDENTS,												
CHIPS—Chips from tools,											2	2
Chips from material (flying objects),										7	66	73
CRANES—All accidents in connection with overhead cranes.											2	2
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,									2		2	4
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.).									4	4	13	21
EYE—Foreign bodies in eye (not otherwise classified),											4	4
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,											2	2
Into unprotected hole,												
Scaffolds,											2	2
Slipping or tripping (from above),									1	4	16	21
Slipping or tripping (ground level),										2	35	37
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,											1	1
HAND LABOR—Caught between material.	1								2	8	47	57
Hand truck or wheelbarrow,										1	2	3
Struck by falling material,									8	10	137	155

Ran into, struck hand or part of body against something,										1	7	8
Sledge, hammer, hatchet or hand tools,											35	35
Slivers, sharp edges, etc.,											18	18
Sprains, lifting or pulling,					1					2	13	15
MACHINERY—Caught in or struck by moving machinery (other than cranes),									1	2	8	11
Conveying machinery,											1	1
Gears,											1	1
Saws,		1								1	2	3
Shears,												
Shafting, pulleys, belts, set screws, etc.,										1	3	4
Struck by material in moving machinery (other than cranes),												
Machinery breaking,												
MINING,*												
NAILS—Protruding,											6	6
RAILROADS*—(Standard and narrow gauge), collisions,									1		2	3
Coupling or uncoupling cars,										2	9	11
Defective equipment,										1		1
Derailment and replacing cars,										1	3	4
Fell from engine or car, or into car,											3	3
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,	1								1	3	90	94
Men working on or under cars or climbing through trains,											3	3
Poling cars,											2	2
Struck by car or engine,			1						3	2	5	10
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,											1	1
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,									1	5	35	41
Laundry machines—Other than general,												
Quarrying,												
Other causes,												
Total,	2	1	1		1				25	58	598	681

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PUBLIC SERVICE.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,	1	.....	.....	.....	.....	.....	.....	....	3	.....	.....	.....	.....	.....	.....
BURNS—Electric shocks (other than cranes),	33	6	2	2	.....	.....	.....	....	6	.....	.....	.....	.....	.....	.....
Hot metal, flue dust, or flames,	318	14	10	3	.....	2	.....	....	15	.....	.....	.....	.....	.....	.....
Steam, hot water, acids, etc., (including gauge glass),	212	2	6	1	.....	.....	.....	....	6	.....	.....	.....	.....	.....	.....
BOILER ACCIDENTS,	1	.....	.....	1	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
CHIPS—Chips from tools,	.....	9	53	1	.....	2	.....	....	9	.....	.....	.....	.....	.....	.....
Chips from material (flying objects),	78	79	464	7	.....	5	.....	1	245	2	.....	.....	.....	.....	.....
CRANES—All accidents in connection with overhead cranes,	.....	42	18	8	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
All accidents in connection with locomotive cranes,	.....	3	2	1	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of block and tackle.	1	4	2	1	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
All accidents in connection with the use of winches,	.....	3	2	.....	.....	1	.....	....	.....	.....	.....	.....	.....	.....	.....
ELEVATOR ACCIDENTS,	.....	3	1	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
EMERY WHEELS—All accidents at emery wheels,	4	15	46	1	.....	1	.....	....	47	.....	1	.....	.....	.....	.....
EXCAVATING,	.....	2	.....	4	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),	11	.....	2	.....	.....	.....	.....	....	2	.....	.....	.....	.....	.....	.....
EYE—Foreign bodies in eye (not otherwise classified),	13	15	12	.....	.....	2	.....	1	259	.....	.....	.....	.....	.....	.....
FALLING MATERIAL—(Other than by hand labor or hoisting),	.....	4	2	1	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
FALLS—From ladder,	1	48	10	60	.....	.....	.....	....	2	.....	.....	.....	.....	.....	.....
Into unprotected hole,	2	54	2	42	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
Scaffolds,	.....	28	12	22	.....	.....	.....	....	2	.....	.....	.....	.....	.....	.....
Slipping or tripping (from above),	7	218	51	230	.....	2	.....	....	5	.....	.....	.....	.....	.....	.....
Slipping or tripping (ground level),	7	361	94	482	3	5	.....	....	5	.....	.....	.....	.....	.....	.....
FIGHTING OR PLAYING,	1	8	8	3	.....	.....	.....	....	1	.....	.....	.....	.....	.....	.....
CRAMPS, OVERCOME WITH HEAT, ETC.,	.....	4	1	3	.....	.....	.....	....	3	.....	.....	.....	.....	.....	.....
HAND LABOR—Caught between material,	2	916	411	89	.....	1	.....	1	12	.....	.....	.....	.....	.....	.....
Hand truck or wheelbarrow,	.....	268	37	71	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Struck by falling material,	14	2,011	516	139	.....	7	.....	1	21	.....	.....	.....	.....	.....	.....

Ran into, struck hand or part of body against something,	28	287	206	75	.....	6	.....	2	3	.....	.....	.....	.....	.....	.....
Sledge, hammer, hatchet or hand tools,	5	897	567	145	.....	10	.....	.....	19	.....	.....	.....	.....	.....	.....
Slivers, sharp edges, etc.,	1	37	335	.....	.....	45	.....	5	12	1	.....	.....	.....	.....	.....
Sprains, lifting or pulling,	.....	37	4	866	11	.....	.....	.....	5	.....	.....	.....	.....	.....	.....
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1	71	89	21	.....	1	.....	2	1	.....	.....	.....	.....	.....	.....
Conveying machinery,	.....	5	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gears,	.....	10	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saws,	.....	5	24	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Shears,	.....	9	10	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shafting, pulleys, belts, set screws, etc.,	3	15	10	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by material in moving machinery (other than cranes),	1	26	22	6	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinery breaking,	.....	5	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MINING,*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
NAILS—Protruding,	.....	29	156	2	.....	134	.....	.....	1	.....	.....	.....	.....	.....	.....
RAILROADS*—(Standard and narrow gauge), collisions,	1	11	4	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coupling or uncoupling cars,	1	21	8	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Defective equipment,	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Derailment and replacing cars,	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fell from engine or car, or into car,	2	68	14	63	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Hand car accidents,	.....	6	3	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holes or loose obstructions along track,	.....	3	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Improperly loaded ladles or cars,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Loading or unloading material,	.....	560	144	145	.....	6	.....	.....	6	.....	.....	.....	.....	.....	.....
Men working on or under cars or climbing through trains,	4	90	46	42	.....	4	.....	.....	11	.....	.....	.....	.....	.....	.....
Poling cars,	.....	3	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Struck by car or engine,	1	19	2	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Struck by overhead or side obstructions,	.....	2	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switch stands—throwing or fell over,	1	14	2	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unlocked frogs or guard rails,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MISCELLANEOUS—Animals and vehicles,	.....	26	15	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laundry machines—Other than general,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quarrying,	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other causes,	.....	7	3	5	.....	1	.....	2	4	.....	.....	.....	.....	.....	.....
Total,	755	6,371	3,504	2,567	14	237	.....	16	699	3	1	.....	.....	.....	.....

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

PUBLIC SERVICE—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,									2		2	4
BURNS—Electric shocks (other than cranes),									3	10	36	49
Hot metal, flue dust, or flames,									2	14	346	362
Steam, hot water, acids, etc., (including gauge glass),										17	210	227
BOILER ACCIDENTS,											2	2
CHIPS—Chips from tools,										3	71	74
Chips from material (flying objects),									1	37	843	881
CRANES—All accidents in connection with overhead cranes,									1	5	63	69
All accidents in connection with locomotive cranes,										1	6	7
All accidents in connection with the use of block and tackle.										1	7	8
All accidents in connection with the use of winches,											6	6
ELEVATOR ACCIDENTS,										2	4	6
EMERY WHEELS—All accidents at emery wheels,										2	113	115
EXCAVATING,										2	4	6
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),										2	13	15
EYE—Foreign bodies in eye (not otherwise classified),										3	290	293
FALLING MATERIAL—(Other than by hand labor or hoisting),											7	7
FALLS—From ladder,									1	17	103	121
Into unprotected hole,										12	89	101
Scaffolds,									1	7	56	64
Slipping or tripping (from above),									7	58	445	510
Slipping or tripping (ground level),									4	52	851	907
FIGHTING OR PLAYING,										1	20	21
CRAMPS, OVERCOME WITH HEAT, ETC.,										1	10	11
HAND LABOR—Caught between material,	2	1							5	65	1,365	1,435
Hand truck or wheelbarrow,										17	359	376
Struck by falling material,		1							2	73	2,617	2,697

Ran into, struck hand or part of body against something,										30	577	607
Sledge, hammer, hatchet or hand tools,									2	37	1,604	1,643
Slivers, sharp edges, etc.,										11	475	486
Sprains, lifting or pulling,										58	865	923
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1									26	161	187
Conveying machinery,										1	7	8
Gears,										1	19	20
Saws,	1									6	25	31
Shears,										2	19	21
Shafting, pulleys, belts, set screws, etc.,										2	29	31
Struck by material in moving machinery (other than cranes),	1								2	6	49	57
Machinery breaking,										1	12	13
MINING,*												
NAILS—Protruding,										8	314	322
RAILROADS*—(Standard and narrow gauge), collisions,										4	17	21
Coupling or uncoupling cars,									1	7	33	41
Defective equipment,											1	1
Derailment and replacing cars,											1	1
Fell from engine or car, or into car,										14	135	149
Hand car accidents,		1								1	13	14
Holes or loose obstructions along track,										2	6	8
Improperly loaded ladles or cars,												
Loading or unloading material,										43	818	861
Men working on or under cars or climbing through trains,									1	14	182	197
Poling cars,											4	4
Struck by car or engine,									4	10	19	33
Struck by overhead or side obstructions,									1	1	1	3
Switch stands—throwing or fell over,										1	22	23
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,									1	15	49	65
Laundry machines—Other than general,												
Quarrying,											1	1
Other causes,									1	1	20	22
Total,	5	3							42	709	12,416	14,167

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

TOBACCO AND ITS PRODUCTS.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),	1														
Hot metal, flue dust, or flames,															
Steam, hot water, acids, etc., (including gauge glass).															
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),															
CRANES—All accidents in connection with overhead cranes.															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle.															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,		1													
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(Other than by hand labor or hoisting),															
FALLS—From ladder,															
Into unprotected hole,		1													
Scaffolds,															
Slipping or tripping (from above),		1		1											
Slipping or tripping (ground level),															
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,		1													
Hand truck or wheelbarrow,															
Struck by falling material,		4	1												

Ran into, struck hand or part of body against something,															
Sledge, hammer, hatchet or hand tools,				1											
Slivers, sharp edges, etc.,															
Sprains, lifting or pulling,		1													
MACHINERY—Caught in or struck by moving machinery (other than cranes),		2	1												
Conveying machinery,															
Gears,															
Saws,															
Shears,															
Shafting, pulleys, belts, set screws, etc.,															
Struck by material in moving machinery (other than cranes),															
Machinery breaking,															
MINING,*															
NAILS—Protruding,			1												
RAILROADS*—(Standard and narrow gauge), Collisions,															
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,															
Fell from engine or car, or into car,															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,															
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,															
Laundry machines—Other than general,															
Quarrying,															
Other causes,															
Total,	1	11	3	2											

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

TOBACCO AND ITS PRODUCTS—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),											1	1
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc., (including gauge glass),												
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),												
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,												
EMERY WHEELS—All accidents at emery wheels,											1	1
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,												
Into unprotected hole,												
Scaffolds,											1	1
Slipping or tripping (from above),												
Slipping or tripping (ground level),										1	1	2
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,												
Hand truck or wheelbarrow,										1		1
Struck by falling material,												
											5	5

Ran into, struck hand or part of body against something,												
Sledge, hammer, hatchet or hand tools,										1		1
Slivers, sharp edges, etc.,												
Sprains, lifting or pulling,											1	1
MACHINERY—Caught in or struck by moving machinery (other than cranes),	1									2	2	4
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shafting, pulleys, belts, set screws, etc.,												
Struck by material in moving machinery (other than cranes)												
Machinery breaking,												
MINING,*												
NAILS—Protruding,											1	1
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,												
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,												
Quarrying,												
Other causes,												
Total,	1									5	13	18

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

UNCLASSIFIED INDUSTRIES.

Cause of Accident.	Injury.														
	Nature of Injury.									Loss of Parts.					
										Eyes.		Arms.		Hands.	
	Burns and scalds.	Crushes and bruises.	Cuts and lacerations.	Fractures, sprains and dislocations.	Hernia.	Puncture.	Bladder and urethra.	Blood poisoning.	Unclassified.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of both.
ASPHYXIATION,															
BURNS—Electric shocks (other than cranes),															
Hot metal, flue dust, or flames,															
Steam, hot water, acids, etc., (including gauge glass),	1														
BOILER ACCIDENTS,															
CHIPS—Chips from tools,															
Chips from material (flying objects),		1													
CRANES—All accidents in connection with overhead cranes,															
All accidents in connection with locomotive cranes,															
All accidents in connection with the use of block and tackle.															
All accidents in connection with the use of winches,															
ELEVATOR ACCIDENTS,		1		1											
EMERY WHEELS—All accidents at emery wheels,															
EXCAVATING,															
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),															
EYE—Foreign bodies in eye (not otherwise classified),															
FALLING MATERIAL—(Other than by hand labor or hoisting),															
FALLS—From ladder,															
Into unprotected hole,															
Scaffolds,															
Slipping or tripping (from above),															
Slipping or tripping (ground level),															
FIGHTING OR PLAYING,															
CRAMPS, OVERCOME WITH HEAT, ETC.,															
HAND LABOR—Caught between material,															
Hand truck or wheelbarrow,															
Struck by falling material,		2													

Ran into, struck hand or part of body against something,															
Sledge, hammer, hatchet or hand tools,				1											
Slivers, sharp edges, etc.,															
Sprains, lifting or pulling,															
MACHINERY—Caught in or struck by moving machinery (other than cranes),		1													
Conveying machinery,															
Gears,															
Saws,															
Shears,															
Shafting, pulleys, belts, set screws, etc.,															
Struck by material in moving machinery (other than cranes),															
Machinery breaking,															
MINING,*															
NAILS—Protruding,															
RAILROADS*—(Standard and narrow gauge), Collisions,															
Coupling or uncoupling cars,															
Defective equipment,															
Derailment and replacing cars,				1											
Fell from engine or car, or into car,															
Hand car accidents,															
Holes or loose obstructions along track,															
Improperly loaded ladles or cars,															
Loading or unloading material,															
Men working on or under cars or climbing through trains,															
Poling cars,															
Struck by car or engine,															
Struck by overhead or side obstructions,															
Switch stands—throwing or fell over,															
Unlocked frogs or guard rails,															
MISCELLANEOUS—Animals and vehicles,															
Laundry machines—Other than general,															
Quarrying,															
Other causes,			1												
Total,	1	5	1	3											

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

TABLE OF ACCIDENTS BY CAUSE AND INJURY, 1914.

UNCLASSIFIED INDUSTRIES—Continued.

Cause of Accident.	Injury.											
	Loss of Parts.								Degree.			
	Fingers.		Legs.		Feet.		Toes.					
	Loss of one.	Loss of more than one.	Loss of one.	Loss of both.	Loss of one.	Loss of both.	Loss of one.	Loss of more than one.	Fatal.	Serious.	Minor.	Total.
ASPHYXIATION,												
BURNS—Electric shocks (other than cranes),												
Hot metal, flue dust, or flames,												
Steam, hot water, acids, etc., (including gauge glass),											1	1
BOILER ACCIDENTS,												
CHIPS—Chips from tools,												
Chips from material (flying objects),											1	1
CRANES—All accidents in connection with overhead cranes,												
All accidents in connection with locomotive cranes,												
All accidents in connection with the use of block and tackle,												
All accidents in connection with the use of winches,												
ELEVATOR ACCIDENTS,											2	2
EMERY WHEELS—All accidents at emery wheels,												
EXCAVATING,												
EXPLOSIONS—(Powder, dynamite, gas, dust, steam, etc.),												
EYE—Foreign bodies in eye (not otherwise classified),												
FALLING MATERIAL—(Other than by hand labor or hoisting),												
FALLS—From ladder,												
Into unprotected hole,												
Scaffolds,												
Slipping or tripping (from above),												
Slipping or tripping (ground level),												
FIGHTING OR PLAYING,												
CRAMPS, OVERCOME WITH HEAT, ETC.,												
HAND LABOR—Caught between material,												
Hand truck or wheelbarrow,												
Struck by falling material,										1	1	2

Ran into, struck hand or part of body against something,												
Sledge, hammer, hatchet or hand tools,										1		1
Slivers, sharp edges, etc.,												
Sprains, lifting or pulling,												
MACHINERY—Caught in or struck by moving machinery (other than cranes),											1	1
Conveying machinery,												
Gears,												
Saws,												
Shears,												
Shafting, pulleys, belts, set screws, etc.,												
Struck by material in moving machinery (other than cranes),												
Machinery breaking,												
MINING,*												
NAILS—Protruding,												
RAILROADS*—(Standard and narrow gauge), Collisions,												
Coupling or uncoupling cars,												
Defective equipment,												
Derailment and replacing cars,												
Fell from engine or car, or into car,										1		1
Hand car accidents,												
Holes or loose obstructions along track,												
Improperly loaded ladles or cars,												
Loading or unloading material,												
Men working on or under cars or climbing through trains,												
Poling cars,												
Struck by car or engine,												
Struck by overhead or side obstructions,												
Switch stands—throwing or fell over,												
Unlocked frogs or guard rails,												
MISCELLANEOUS—Animals and vehicles,												
Laundry machines—Other than general,												
Quarrying,												
Other causes,									1			1
Total,									1	3	6	10

*Does not include accidents reported to Department of Mines or to the Public Service Commission.

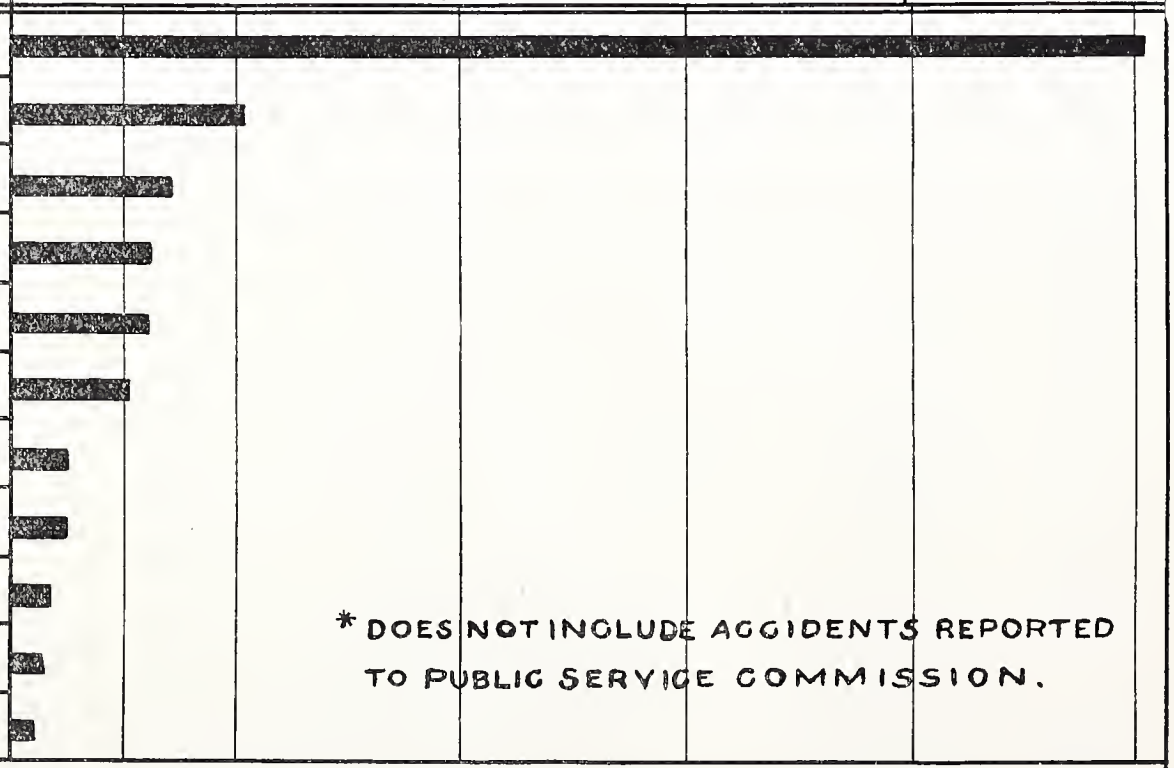
ITEMS OF INTEREST FROM STATISTICAL TABLES.

Total number of accidents reported in 1913,	12,752
Total number of accidents reported in 1914,	38,126
Number of accidents reported in March 1915,	42.25
Total number of employes,	1,086,508

1914.

Percentage of accidents to employes,	3.5
Number of fatal accidents,	379
Number of serious accidents,	3,122
Number of minor accidents,	34,625
Number of accidents to males,	37,904
Number of accidents to females,	222
Number of accidents to Americans,	22,010
Number of accidents to Foreigners,	16,116
Number of accidents to minors,	181
Number of days lost through accidents,	426,824
Amount of wage lost through accidents,	$1,048,503.96
Average daily wage of those injured,	$2.33
Average duration of disability,	11 1-5 days
Average wages lost for each accident,	$24.36
Number of dependents of those injured,	64,076
Number of accidents occurring A. M.,	19,911
Number of accidents occurring P. M.,	18,215
Number of accidents occurring to married employes,	22,747
Number of accidents occurring to unmarried employes,	15,379
Number of Piece workers injured,	13,295
Number of Time workers injured,	24,831
Americans injured per 100 employes,	2.91
Foreigners injured per 100 employes,	4.90

CAUSE	NUMBER	%
HAND LABOR	20339	53.5
FALLS	4178	11.0
MACHINERY	2836	7.4
RAILROADS* (ALL CAUSES)	2507	6.6
BURNS	2444	6.5
CHIPS	2108	5.5
CRANES	980	2.5
MISCELANEOUS	966	2.4
EYE ACCIDENTS (ALL CAUSES)	715	1.9
NAILS	664	1.7
EMERY WHEELS	389	1.0



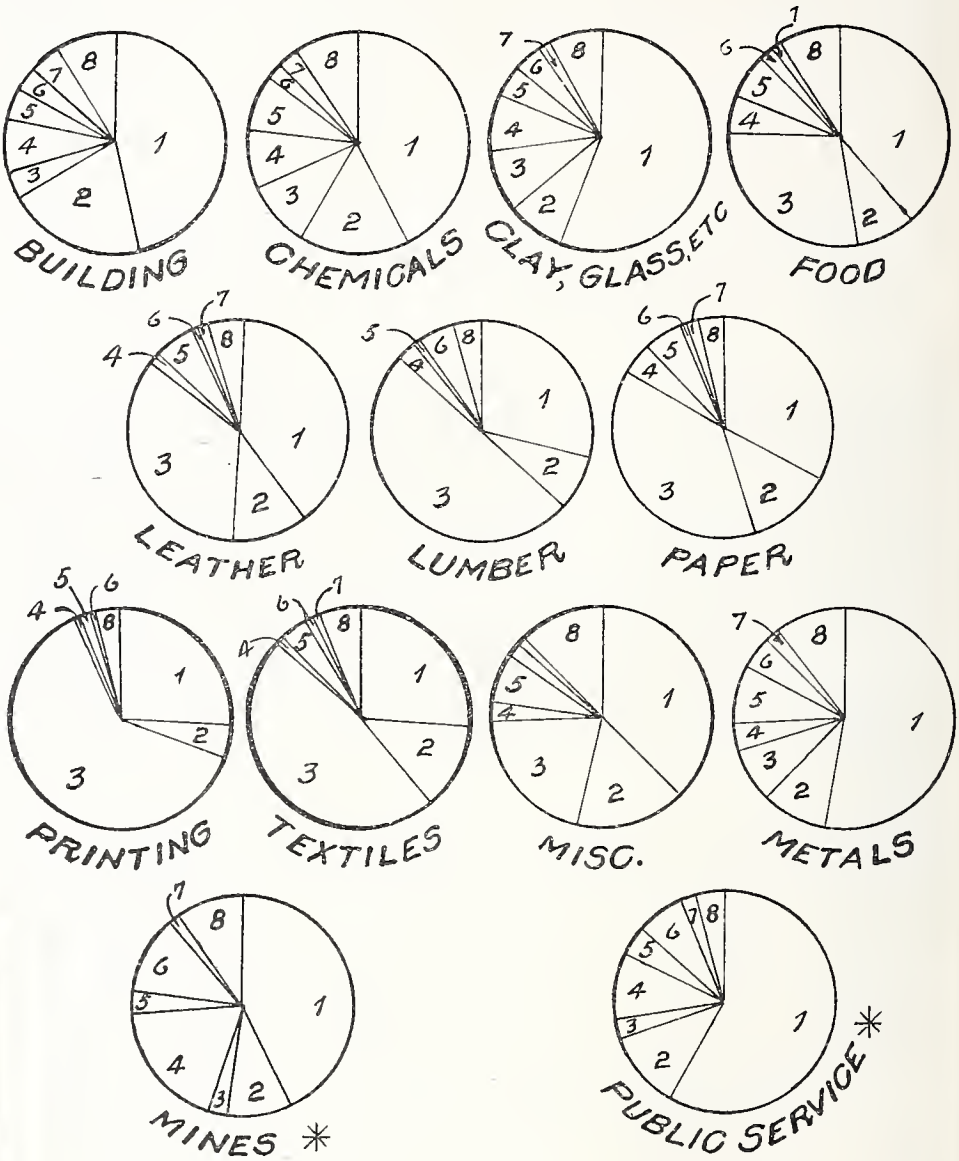
* DOES NOT INCLUDE ACCIDENTS REPORTED TO PUBLIC SERVICE COMMISSION.

CHART OF INDUSTRIAL ACCIDENTS BY CAUSE
— 1914 —

SUMMARY OF 1914 ACCIDENT STATISTICS.

Three methods have been followed in showing the 1914 accident statistics. First, a condensed statement of deductions from the Accident Tables; second, charts showing the most important data; and third, tables giving the detailed information. It is believed that by following this method, the information will be presented in such a manner that the salient features can be gotten by a hasty examination, if no more than these are desired, and that it will not be necessary to search through the detailed tables in order to get a general idea of the important features; and also that the statistician or student of the causes of accidents will find the full details in the tables.

In presenting this matter, fatal accidents have not, as a usual thing, been separated from the non-fatal, but are considered as to cause, distribution of injuries, etc., with the non-fatal accidents. Care should be observed in reading both tables and charts in regard to accidents occurring in connection with public service companies and mining companies, as in most cases, these accidents are not included, while in others the information has been added to that collected by this Department. This situation has been made necessary by the fact that the Public Service Commission and the Department of Mines collect accident reports, but not containing the same amount of detail as those collected by the Department of Labor and Industry. Where information from these two Departments is available, it is included in this report, and in all cases care has been taken to include an explanatory note stating whether or not such information is included.

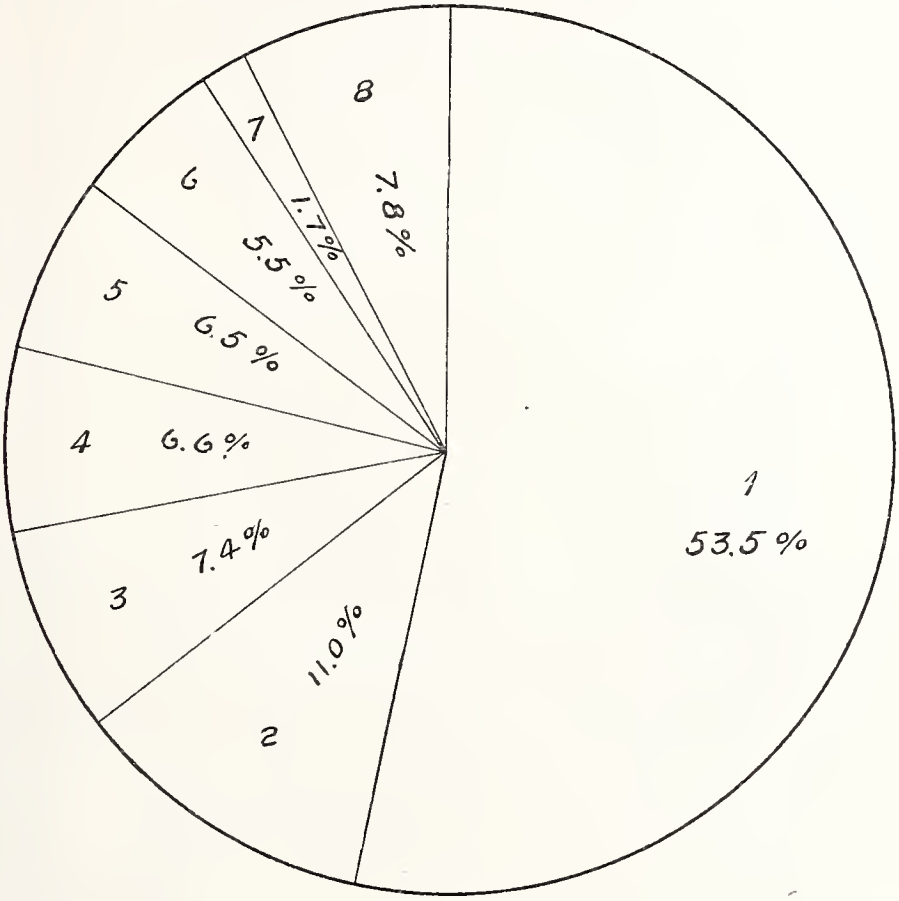


Distribution of Accidents by Cause to Classified Industries

— 1914 —

Explanatory:— For causes represented by each number see list on opposite page.

* Does not include accidents reported to Department of Mines or to Public Service Commission.



DISTRIBUTION OF ACCIDENTS BY CAUSE
TO ALL INDUSTRIES
1914.

List of Causes represented by the numbers used on this and the opposite pages:

1 Hand Labor
2 Falls
3 Machinery
4 Railroads
5 Burns
6 Chips
7 Nails
8 All others

TABLE OF ACCIDENTS BY CAUSES IN VARIOUS INDUSTRIES.

EXPLANATORY OF TWO PRECEDING CHARTS.

Industry.	1. Hand Labor.		2. Falls.		3. Machinery.		4. Railroads (all causes).		5. Burns.		6. Chips.		7. Nails.		8. Others.		All Causes.	
	No.	%	No.	%	No	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Building trades.	341	46.5	153	20.4	30	4.0	53	7.1	38	5.1	32	4.2	38	4.2	64	8.5	749	100
Chemicals and allied products,	224	42.9	83	15.7	51	9.7	46	8.7	47	8.7	11	2.1	19	3.3	47	7.9	528	100
Clay, glass and stone products,	589	56.3	93	8.9	93	8.9	88	8.4	42	4.0	48	4.6	13	1.2	80	7.7	1,046	100
Food and kindred products,	106	38.5	23	8.4	80	29.1	12	4.4	19	6.9	3	1.1	5	1.8	27	9.8	275	100
Leather and rubber goods,	80	39.8	22	10.9	70	34.8	4	2.0	13	6.5	1	.5	3	1.5	8	4.0	201	100
Lumber and its remanufacture,	74	28.3	22	8.4	131	50.2	7	2.7	3	1.1	13	5.0	1	.4	10	3.9	261	100
Paper and paper products,	96	32.1	38	12.7	118	39.3	14	4.7	16	5.3	2	.7	5	1.6	11	3.6	300	100
Printing trades,	28	25.2	5	4.5	70	63.1	1	.9	2	1.8	1	.9	.....	.....	4	3.6	111	100
Textiles,	100	25.9	48	12.4	187	48.5	4	1.0	16	4.1	4	1.0	3	.8	24	6.3	386	100
Miscellaneous,	182	37.4	79	16.2	106	21.7	12	2.5	34	7.0	10	2.0	7	1.2	59	12.0	489	100
Metals and metal products,	10,061	53.3	1,847	9.7	1,522	8.0	768	4.0	1,555	8.2	953	5.0	242	1.3	1,984	10.5	18,932	100
Mines and quarries,*	291	42.6	62	9.1	20	2.9	132	19.4	21	3.1	75	11.1	6	.9	74	10.9	681	100
Public service,*	8,167	57.6	1,703	12.1	368	2.6	1,356	9.6	638	4.5	955	6.7	322	2.3	658	4.6	14,167	100
Total,	20,339	53.5	4,178	11.0	2,836	7.4	2,507	6.6	2,444	6.5	2,108	5.5	664	1.7	3,050	7.8	38,126	100

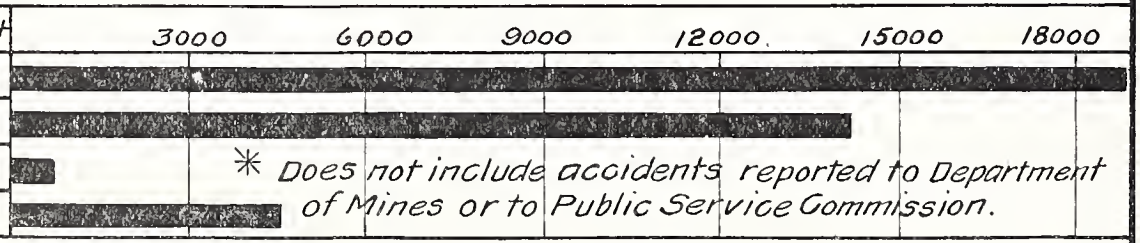
*Does not include accidents reported to Department of Mines or to Public Service Commission.

The first three charts show the distribution of accidents by cause. The striking feature of these charts is the tremendous number of accidents caused by hand labor. 20,339 accidents, or 53.5% are attributed to this one cause. As shown in the second chart, this percentage varies in the several industries from approximately 25% to 60%, but is in all cases one of the two causes to which most of the accidents are due. In several industries, notably the manufacture of leather, lumber, paper and textiles, and particularly in the printing industry, the machinery hazard is responsible for more accidents than hand labor.

The fact that 2% of all the accidents were accidents to the eye, should be a strong argument in favor of workmen wearing goggles or other eye protection in exposed places or work.

DISTRIBUTION OF ACCIDENTS TO INDUSTRIES
1914

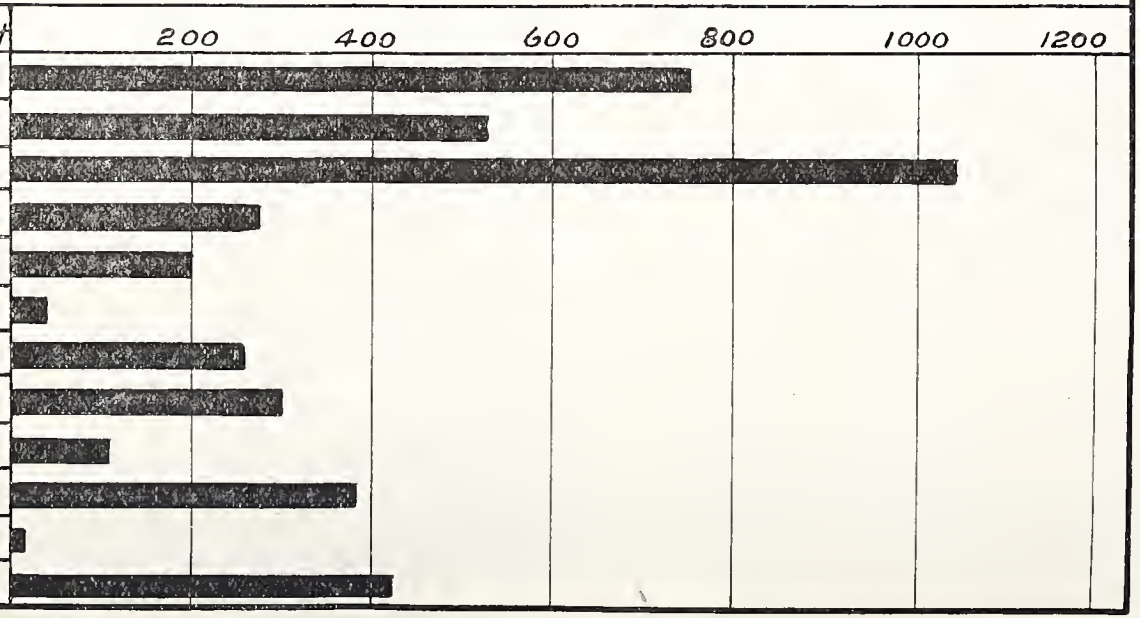
INDUSTRY	NUMBER	Per Cent
Metals	18932	49.6
Public Service*	14167	37.2
Mines *	681	1.8
Miscellaneous	4346	11.4



* Does not include accidents reported to Department of Mines or to Public Service Commission.

DISTRIBUTION OF ACCIDENTS GIVEN ABOVE AS "MISCELLANEOUS"

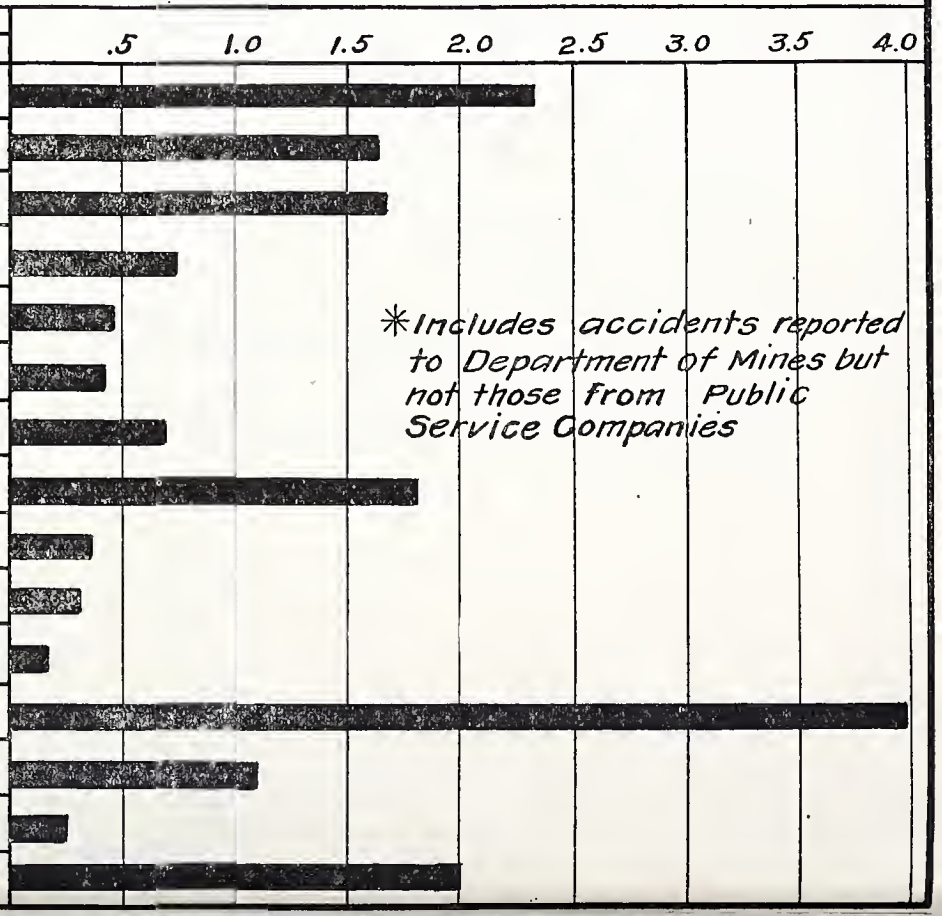
INDUSTRY	NUMBER	Per Cent
Building	749	1.96
Chemicals	528	1.38
Clay & Glass	1046	2.74
Food	275	.73
Leather	201	.53
Liquors	41	.11
Lumber	261	.68
Paper	300	.79
Printing	111	.29
Textiles	386	1.02
Laundries	17	.04
Other	431	1.13



The chart showing the distribution of accidents to the industries demonstrates that the metal working industry, with 18,932 accidents or 49.6% and the public service companies with 14,167 accidents or 37.2%, are by far the greatest contributors. This is due largely to the fact that there are many more employes in these two industries than in any other. It is also probable that accidents are more generally reported from these two industries than from most of the others.

NUMBER OF ACCIDENTS PER 100 EMPLOYEES IN VARIOUS INDUSTRIES. 1914

Industry	Employees	ACCIDENTS Number	ACCIDENTS Per 100
Building	32079	749	2.33
Chemicals	32160	528	1.65
Clay & Glass	62376	1046	1.68
Food	36164	275	.76
Leather	42143	201	.47
Liquors	9603	41	.42
Lumber	37367	261	.70
Paper	16593	300	1.81
Printing	30716	111	.36
Textiles	116324	384	.32
Laundries	10187	17	.17
Metals	473176	18932	3.99
Mines *	365232	3695	1.01
Others *	174982	431	.25
All	1439093	26973	2.01



The chart showing the number of accidents per 100 employes in the industries, shows metals to be the highest contributor. In this industry four men in every 100 employed were injured in 1914. The building trades injured 2.33 in every one hundred, while the least number recorded on this chart is laundries, with .17 per hundred employes. It was necessary to exclude public service companies from consideration in making up this chart on account of the fact that the number of employes engaged in departments thereof reporting to the Department of Labor and Industry could not be ascertained. It should also be noted that mines, with 1.01 injured per 100 employes, is by comparison too low on account of the difference in the method of reporting accidents from this industry.

OCCUPATION	NUMBER	% of All Accidents
Laborers	7918	20.79
Machinists	3278	8.61
Shopmen	2605	6.85
Boiler Makers	998	2.62
Rolling Mill Workers	891	2.34
Blacksmiths	657	1.73
Furnacemen	633	1.66
Carpenters	442	1.16
Shearmen	357	.94
Quarrymen	347	.91
Wire Workers	347	.91
Moulders	331	.87
Bolt, Nut & Rivet Workers	329	.87

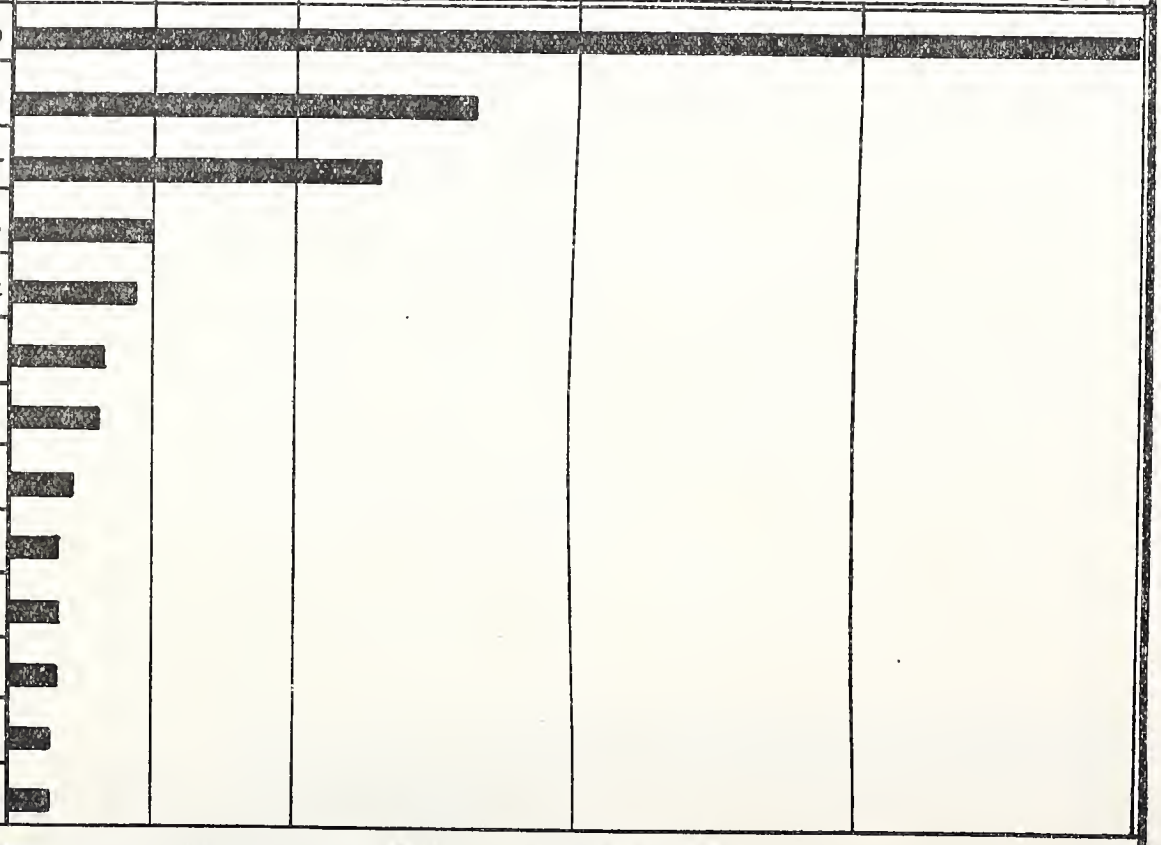


CHART OF INDUSTRIAL ACCIDENTS OCCURRING IN THIRTEEN SELECTED OCCUPATIONS. 1914.

In making up the chart showing the number of accidents by occupation, all occupations in which more than 300 accidents occurred were selected and are shown on the chart opposite.

In these 13 occupations, 19,133, or 50.2% of all the reported accidents occurred. The greatest number of accidents to any one occupation occurred to laborers, with 7,918 accidents, or 20.8% of the total number reported.

An examination of this chart will show that with the exception of carpenters and quarrymen, all the occupations listed are connected with the metal working industries. The foregoing does not strictly apply to laborers, since laborers in all industries are included in this one heading.

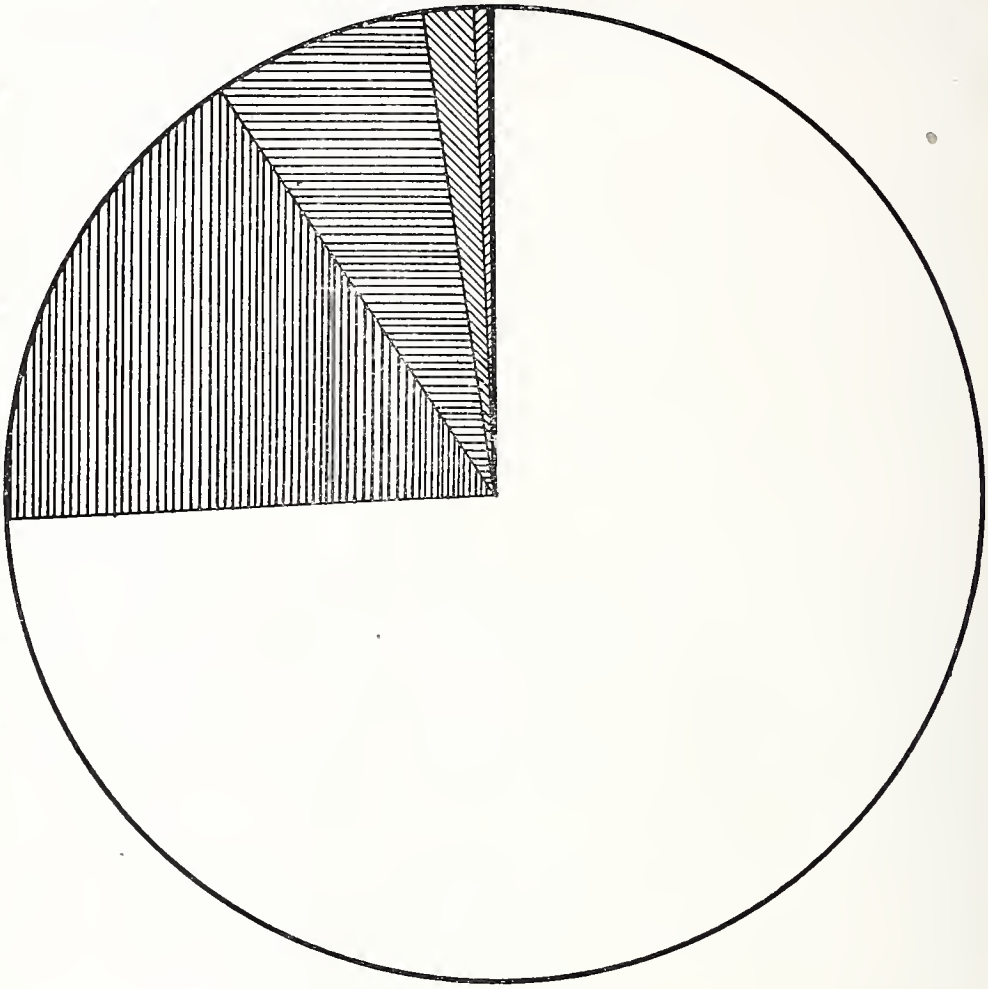


CHART OF NUMBER OF INDUSTRIAL ACCIDENTS
BY DURATION OF DISABILITIES
1914.

	DURATION	NUMBER	%
	Under 2 Weeks	28305	74.2
	2-4 Weeks	6192	16.2
	4-8 Weeks	2746	7.2
	8-13 Weeks	614	1.7
	13 Weeks-6 Mo.	231	.6
	Over 6 Mo.	38	.1

The first chart giving duration of disability, shows that 28,305, or practically three-fourths of the reported accidents, terminated within two weeks, and only 9,821 of the accidents reported to this Department would have been subject to compensation under the usual compensation laws. 38 accidents were reported during the year, which terminated after a loss of time of more than six months.

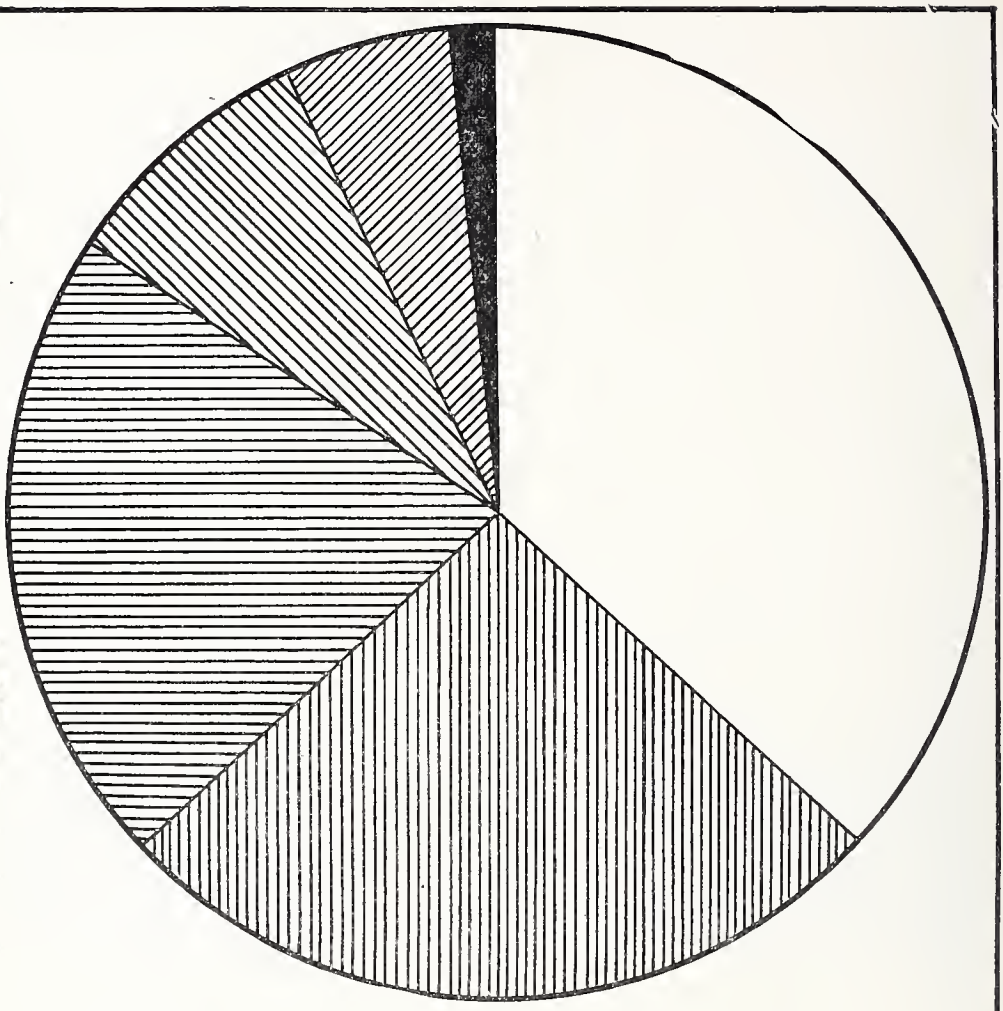


CHART OF DAYS LOST BY INDUSTRIAL ACCIDENTS BY DURATION OF DISABILITY. 1914.

	Duration	Days Lost	%
	Under 2 Weeks	157302	36.9
	2 – 4 Weeks	111257	26.1
	4 – 8 Weeks	91238	21.4
	8 – 13 Weeks	36938	8.7
	13 Weeks – 6 Mo.	23451	5.5
	Over 6 Mo.	6638	1.4

The chart giving the number of days lost by accidents, shows that while accidents lasting more than two weeks are comparatively few in number, their importance is much greater when the total disability is considered. Accidents causing less than two weeks disability are responsible for 36.9% of the total time lost; from two to four weeks, 26.1%, and from four to eight weeks 21.4%. The accidents causing a loss of time of more than eight weeks are comparatively few in number, so that the total time lost by these accidents is 17.6% of the total time lost.

INJURY	NUMBER	%
CRUSHES & BRUISES	14599	38.4
CUTS & LACERATIONS	11536	30.2
FRACTURES & SPRAINS	6130	16.0
BURNS & SCALDS	3018	7.9
UNCLASSIFIED	2004	5.3
PUNCTURE	616	1.6
LOSS OF PARTS	223	.6

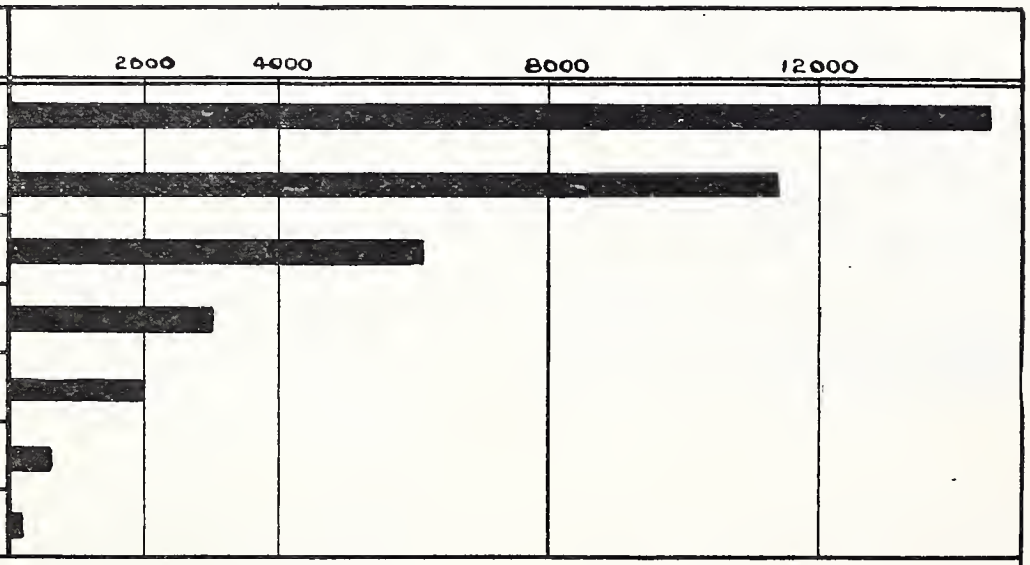
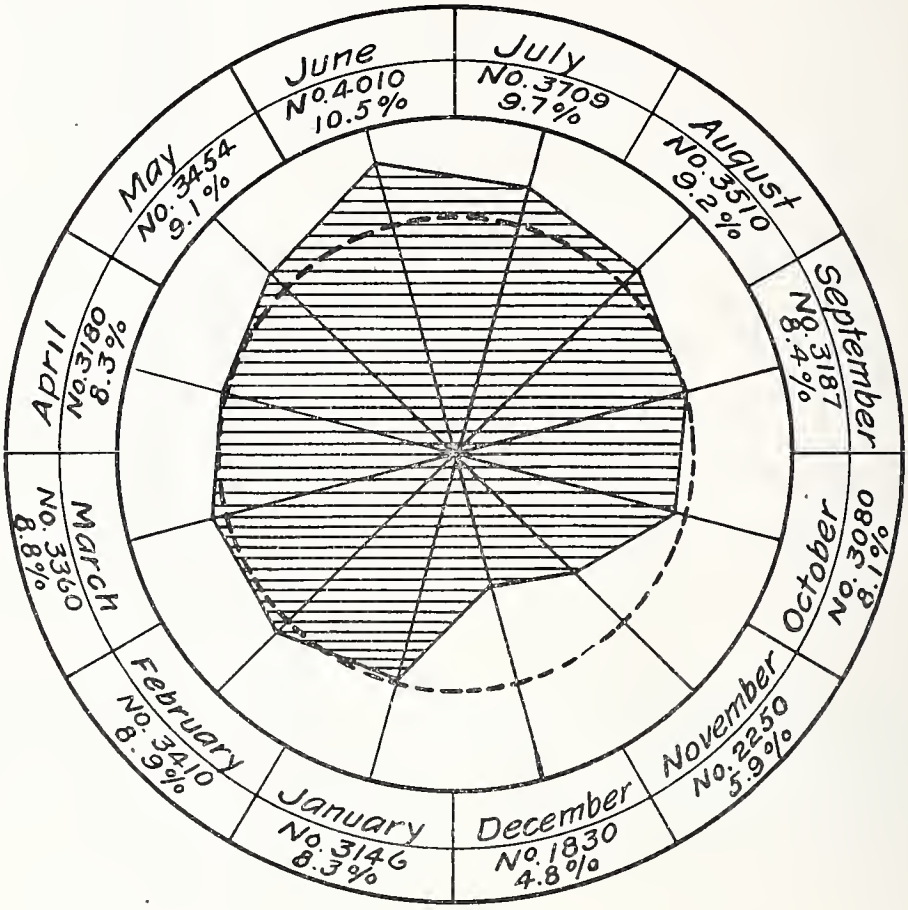


CHART OF INDUSTRIAL ACCIDENTS BY INJURY

— 1914 —

The chart giving the distribution of accidents by injuries, shows that 14,599 accidents, or 38.4%, resulted in crushes or bruises, and that 11,536 accidents, or 30.2% resulted in cuts or lacerations. 223 accidents, or .6% resulted in the loss of one or more parts.



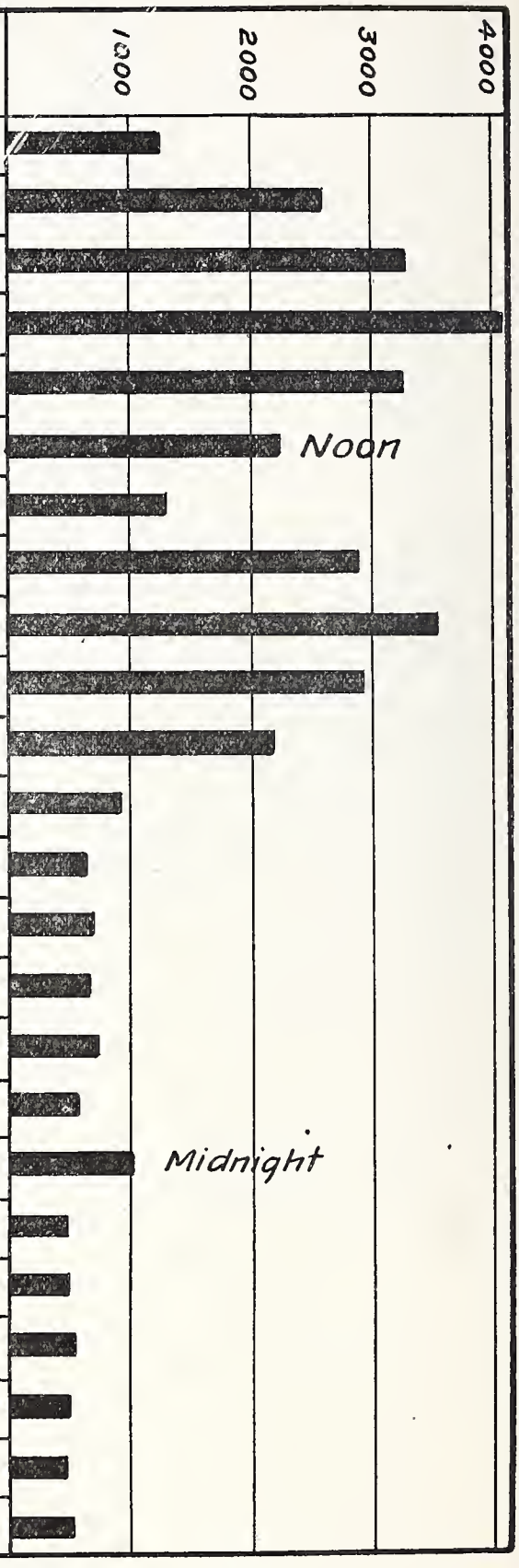
DISTRIBUTION OF ACCIDENTS BY MONTHS
1914.

Broken line indicates the mean number of accidents per month for the year.

In considering the occurrence of accidents by months, it will be noted that the greatest number of accidents occurred during June, July and August, while the months with the least number of accidents were November and December. This is a peculiar circumstance, as it has been claimed by authorities that more accidents occur during the winter months than in the summer. No statistics are available as to the number of employes engaged during each month, so that it is impossible to state whether or not less accidents occurred per one hundred employes during November and December than during the rest of the year.

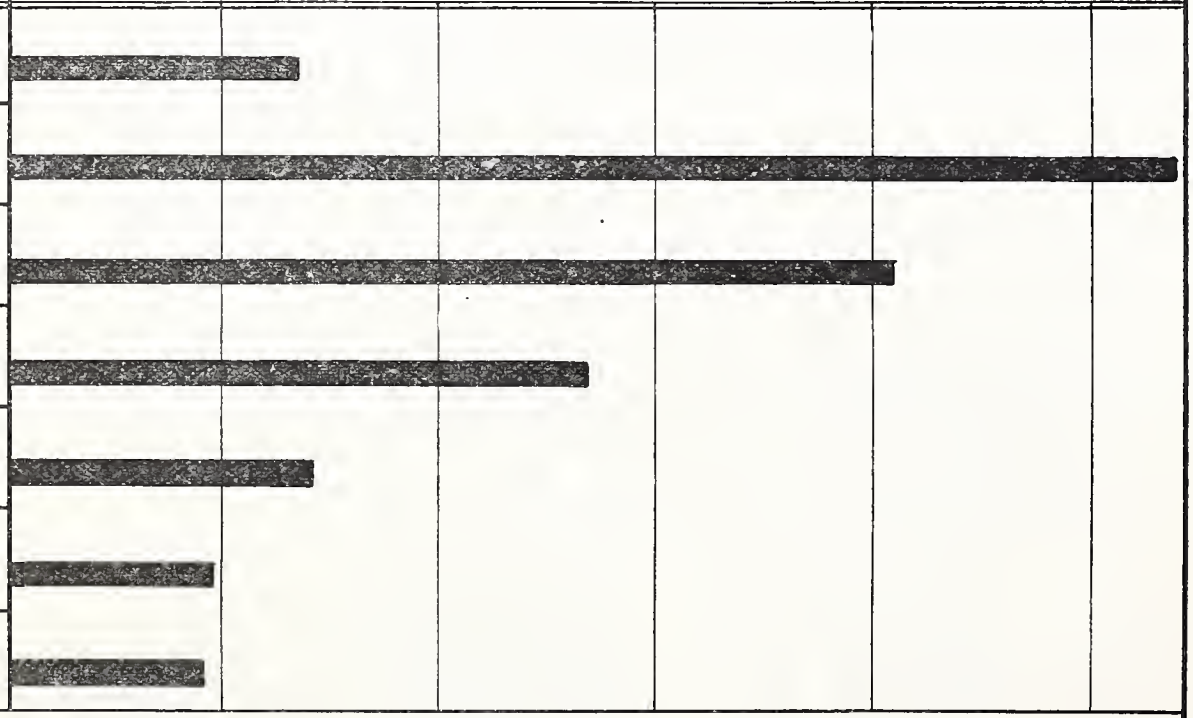
CHART OF INDUSTRIAL ACCIDENTS BY HOURS
1914.

Hour	Number	%
A.M. 7	1252	3.3
8	2609	6.8
9	3319	8.7
10	4145	10.9
11	3297	8.7
12	2234	5.9
P.M. 1	1318	3.4
2	2888	7.5
3	3559	9.4
4	2937	7.7
5	2217	5.7
6	918	2.4
7	623	1.6
8	712	1.9
9	667	1.8
10	749	2.0
11	588	1.5
12	1034	2.7
A.M. 1	481	1.3
2	494	1.3
3	548	1.4
4	510	1.4
5	481	1.3
6	541	1.4



In considering the distribution of accidents by hours, it is found that the greatest number of accidents occur in the middle of the forenoon and in the middle of the afternoon. 3,319 accidents occurred at 9 A. M., 4,145 at 10 A. M., and 3,297 at 11 A. M. There is then a lessening number, with 1,318 at 1 P. M., followed by an increase to 3,559 at 3 P. M. These peaks at 10 o'clock and at 3 o'clock are found in practically all accident statistics and are usually attributed to the fact that the workmen on first coming to work in the morning or returning after lunch, take some little time to get speeded up to their work, and that they are more liable to injury when they had reached their maximum speed and become more or less thoughtless of the dangers of the work. During the night from 7 P. M. to 6 A. M. the number is approximately uniform at about 600 accidents at each hourly period.

WAGES	No.	%
Under $9.00	2686	8.2
$9.00–$12.00	10889	32.3
$12.00–$15.00	8190	24.2
$15.00–$18.00	5378	16.0
$18.00–$21.00	2819	8.3
$21.00–$24.00	1871	5.6
Over $24.00	1809	5.4



DISTRIBUTION OF INDUSTRIAL ACCIDENTS BY WEEKLY WAGES.
1914.

The distribution of accidents by weekly wages shows that 10,889 accidents or 32.3%, occurred to persons receiving from $9 to $12 per week, and 8,190 accidents, or 24.2%, occurred to those receiving from $12 to $15 per week; that more than half of the accidents occurred to employes receiving from $9 to $15 per week is to be expected, as the great majority of workmen probably fall within these wage limits. 2,686 accidents or 8.2%, occurred to employes receiving less than $9 per week, and 1,809 accidents or 5.4%, to those receiving more than $24 per week.

Ages	No. of Accidents	%
Under 16	181	.48
16 — 20	4677	12.2
21 — 29	14143	37.1
30 — 39	10907	28.6
40 — 49	5446	14.3
50 — 59	2089	5.5
60 and over	683	1.8

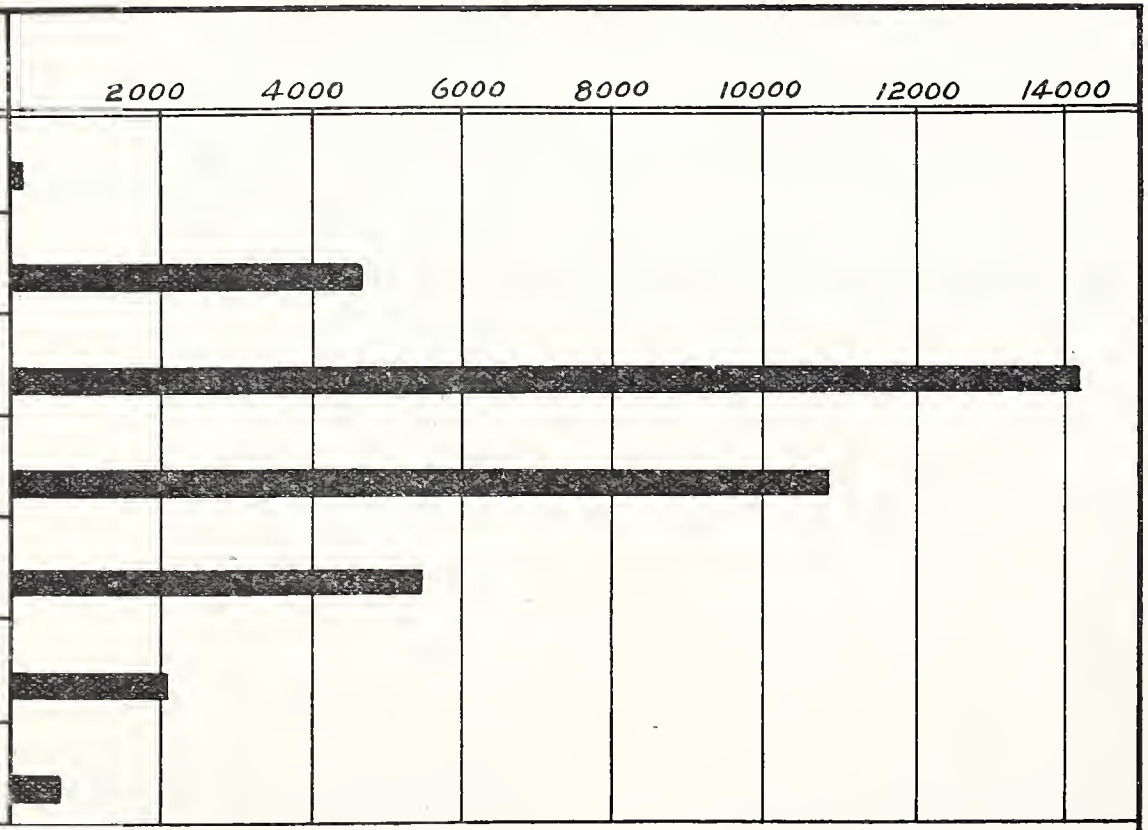
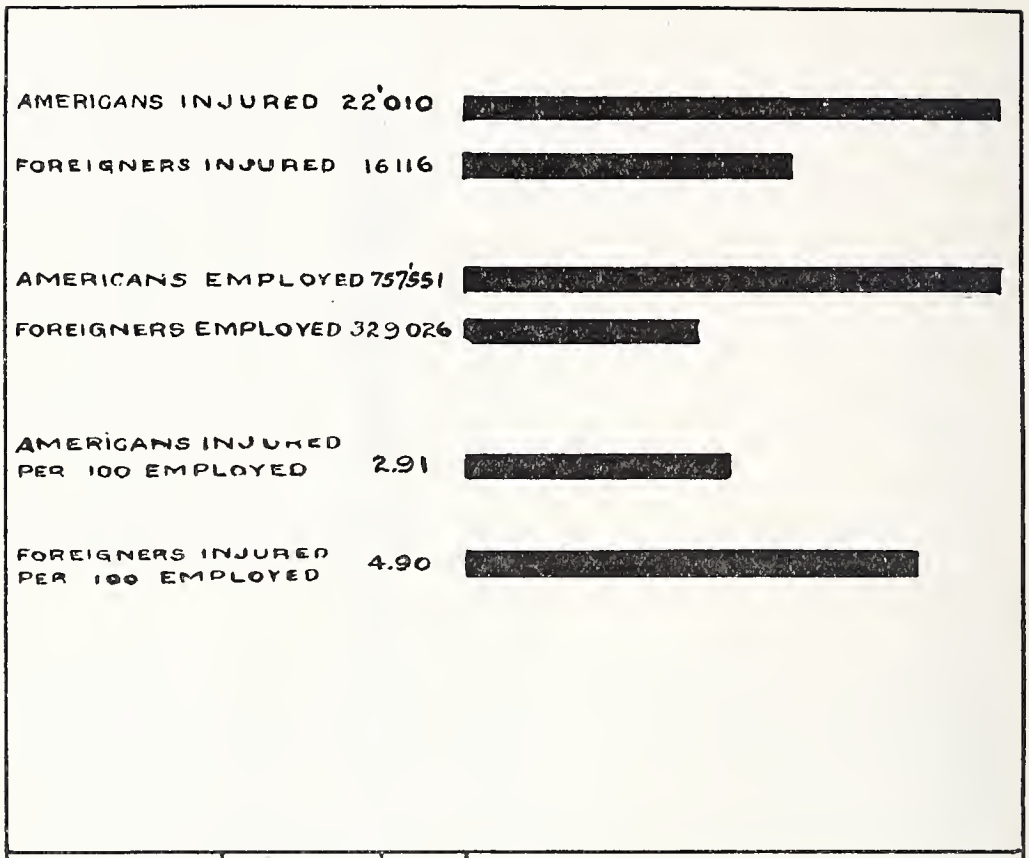


CHART OF INDUSTRIAL ACCIDENTS BY AGE PERIODS
1914.

The chart arranged by ages of the injured shows that 181 children under sixteen years of age met with injuries during the year, and that the greatest number of accidents, 14,143 or 37.1% occurred to employes between twenty-one and twenty-nine years of age; and that 10,907 or 28.6%, occurred to employes between thirty and thirty-nine years of age. No facts are available as to the number of employes in the State at the various age periods, but it is probable that by far the greatest number are between the ages of 21 and 40, in which period 65.7% of the accidents occurred.



NATIONALITY	NUMBER	%
AUSTRIAN HUNGARIAN	6688	41.5
ITALIAN	3064	19.0
RUSSIAN	1742	10.8
POLISH	1237	7.7
GERMAN	717	4.4
ENGLISH, SCOTCH, WELSH	456	2.8
IRISH	348	2.2
SLAVISH	345	2.2
OTHER	1519	9.4

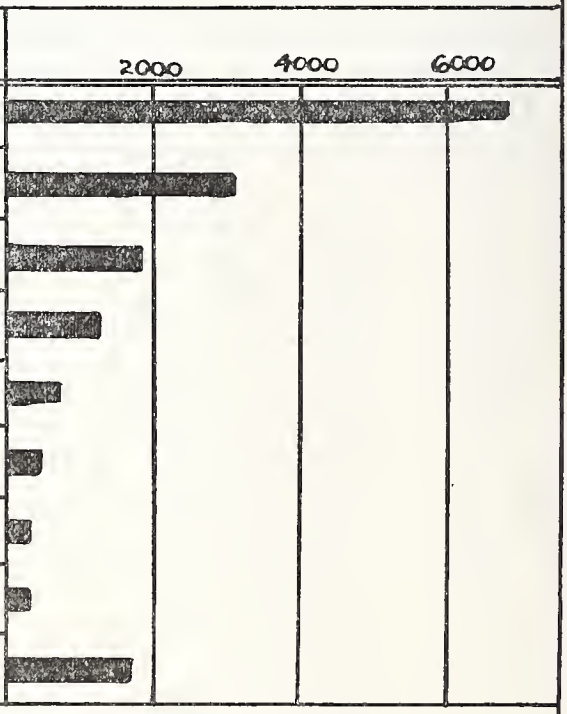


CHART SHOWING DISTRIBUTION OF ACCIDENTS TO FOREIGNERS BY NATIONALITY
—1914—

The chart of accidents to foreigners presents an interesting condition. 22,010 Americans were injured as compared to 16,116 foreigners. Considering this on a basis of 100 employes, it is found that 2.91 Americans were injured per 100 employed, and 4.90 foreigners injured per 100 employed. It is interesting to consider this large proportion of foreigners injured with the fact that the greatest number of injuries were caused by hand labor in which foreigners are chiefly engaged, and that the industries responsible for the greatest number of injuries are the metal working trades and public service companies, which employ the greatest number of foreigners. Mining accidents should not be considered in this connection for reason already given.

The distribution of accidents to foreigners by nationalties shows that 6,688 accidents, or 41.5% occurred to Austrians and Hungarians, and that 3,064 accidents, or 19.0% occurred to Italians. Again it is impossible to give the absolute relative number on account of the fact that the number of each nationality employed in the State is not known.

	No.	%
DEGREE		
Fatal	379	1.0
Serious	3122	8.2
Minor	34625	90.8
SEX		
Females	222	0.6
Males	37904	99.4
AGE PERIOD		
Under 16 Years	181	0.5
Over 16 Years	37945	99.5
LANGUAGE		
Non English Speaking	6146	16.1
English Speaking	31980	83.9
CLASS		
Piece Workers	13295	34.8
Time Workers	24831	65.2

The next chart sets forth a variety of information. It shows in regard to the degree of injury that 379 accidents, or 1% were fatal; that 3,122, or 8.2% were considered serious, while 34,625, or 90.8% were of a minor nature.

In considering the distribution of accidents by sex, it is to be noted that only 222 accidents, or .6% occurred to females, while the remaining 37,004, or 99.4% occurred to males. As previously noted, 181 accidents, or .5% occurred to children under the age of 16 years, while 37,945, or 99.5% occurred to persons over this age.

The argument is freqnently advanced that many accidents occur because the workman is unable to understand the English language, and in this connection it is worthy of note that 6,146 accidents, or 16.1% occurred to non-English speaking persons, while 31,980, or 83.9% occurred to those who speak English. Accidents occurring in coal mines are again not considered in this statement.

Piece workers met with 13,295 accidents, or 34.8%, while those working on a time basis met with 24,831 accidents, or 65.2%.

Vol. 2 No. 3

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

MARCH, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Division.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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THE PURPOSE OF THE BULLETIN.

In publishing the Monthly Bulletin, it has been the intention to bring before the public different articles and items bearing on all phases of the safety movement which is sweeping rapidly over this country. It has been extremely gratifying to the officials of the Department of Labor and Industry to note the interest which is being manifested throughout the Commonwealth in this safety movement. A general acceptance of the fact that a large proportion of accidents can be avoided is being noted, and it is the aim in publishing this Bulletin to aid the cause of safety. It would be a great help if those at the head of safety movements in their respective plants would send in news items concerning the work which is being accomplished or is being undertaken along safety, sanitary or welfare lines. These items should contain statistics concerning the reductions of accidents, accounts of avoidable accidents, or copies of pictures showing how accidents have occurred or of devices which have proven valuable in the prevention of accidents.

It is manifestly impossible for this publication to be of maximum service to the industries of Pennsylvania unless all those interested in this work will actively assist by giving their advice and experience. The columns of this Bulletin are open to all, and it is the earnest wish of the Department that all persons interested in safety work in this Commonwealth will give their fullest co-operation.

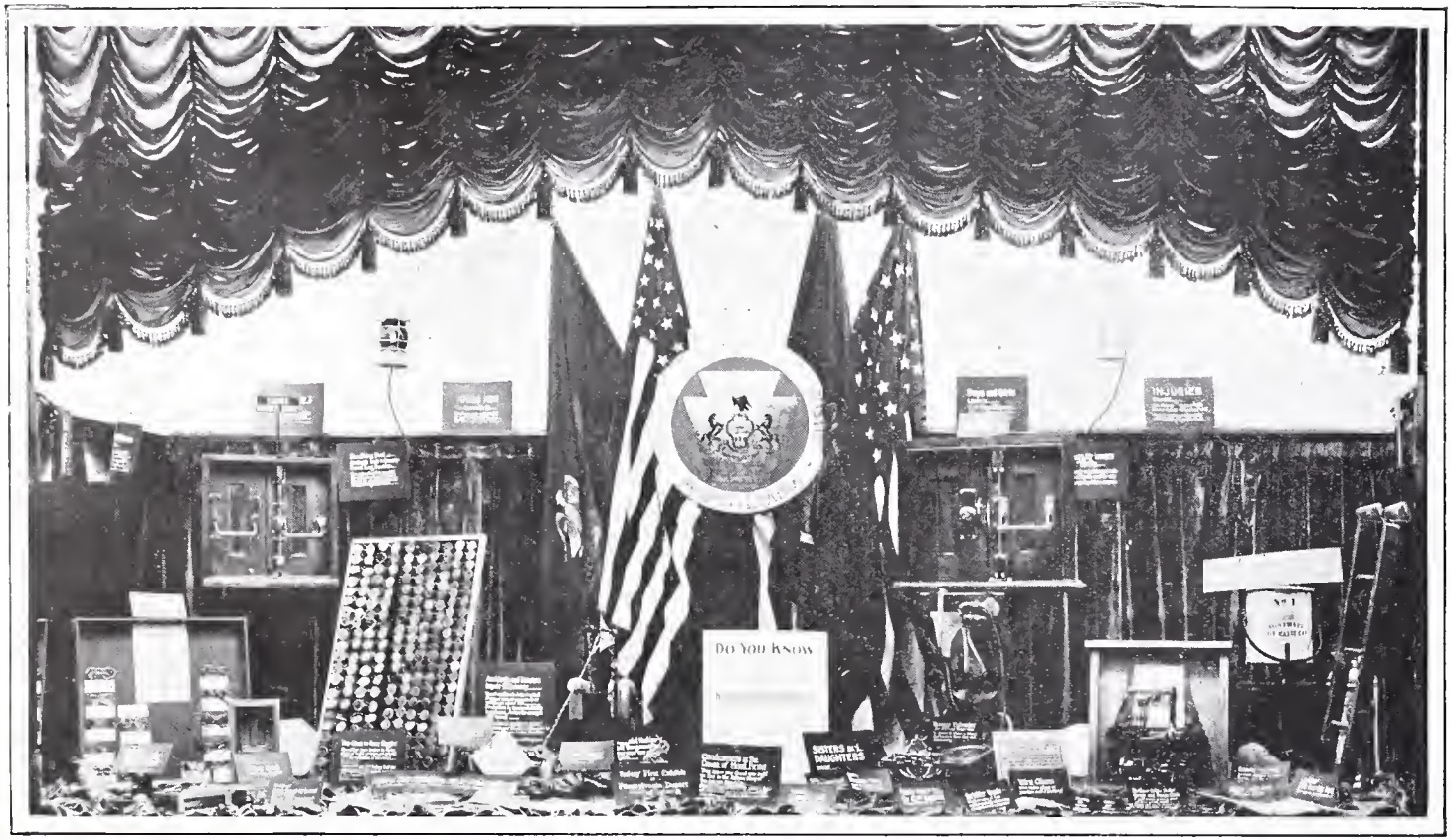
The Safety Exhibit which is now being shown in different cities in the eastern part of the State—mention of which is made in another article—is attracting considerable attention. If there is any particular vicinity where it is thought that its presence might help to inaugurate or encourage a safety movement, the Commissioner will be glad to hear of it, and if arrangements can be made, the exhibit will be sent there free of expense.

The mailing list for the Bulletin is rapidly being filled up; but, as there is still a large number of copies which are available for distribution, it is urged that those who wish additional copies sent to individual addresses, or those who have new addresses to suggest, will send them in at once, so that they can be listed immediately.

Unfortunately, owing to the large amount of printing which has been made necessary by the meeting of the Legislature, and on account of other unavoidable delays, the appearance of the last few

issues of this Bulletin has been irregular. It was impossible to avoid this condition; but it is hoped that, beginning with the April issue, it will be possible to resume the regular issuance of this Bulletin.

With this issue, a series of articles dealing with phases of the safety work of several of the companies in this State will be commenced. As notice and information of the activities of other companies, along the same line, are brought to the attention of the Editor of the Bulletin, other articles will be published from time to time.



(Courtesy of The Iron Age, N. Y.)

TRAVELING SAFETY EXHIBIT IN STORE WINDOW OF McCREERY & CO., PITTSBURGH. ARRANGED BY MR. C. A. VOSBERG, HEAD DECORATOR.

TRAVELING SAFETY EXHIBIT.

The Department of Labor and Industry has conducted several safety exhibits since the beginning of the year, the first one being held in a window of McCreary & Company's Department Store, in Pittsburgh. This exhibit by the Department held in Pittsburgh was one of a group of exhibits of safety devices. The other contributors to the group included seven manufacturing companies and two railroads. It was owing to the efforts of Mr. C. A. Vosberg, head window decorator, that the display was arranged in a manner that was very attractive to the public. On one day, when a count was made, it was found that 25,000 persons had stopped to view the windows.

Other exhibits have been held since this time exclusively by the Department of Labor, in Harrisburg, in the windows of Dives, Pomeroy & Stewart's Department Store, and in York, in the store windows of Charles H. Baer & Company.

The aim of an exhibit of safety devices is to educate the public as to the means used at the present time to protect the workmen in our State's industries against accident. The Department of Labor has gathered together a number of the most important of these devices to use in displays. The principal articles in the exhibit are as follows: a pulmotor for resuscitating injured workmen; wood working machinery guards; different kinds of guards and devices for those who work in metal products; safety signs of all descriptions; a frog guard for railroad tracks; tongs for holding chisels; fire prevention and fire fighting apparatus; foundry leggings; safety lamps; safety electric switches; engine safety water gauges; governor guard; safety lathe dogs; eye goggles; safety set-screws and many other different articles.

It is hoped that manufacturers who become interested in such exhibits will keep the Department informed of new safety devices. The Department would also be glad to receive models of articles of this kind for use in these displays. As plans are being made to have the Department's exhibit continuously shown from place to place in the Commonwealth throughout the year, there will be ample opportunity to use a great variety of articles for exhibit, and to acquaint the public with their use.

SAFETY WORK IN THE INDUSTRIES OF PENNSYLVANIA.

(Editor's Note: The following items have been prepared concerning the safety work of the respective establishments in so far as their activities have come to the attention of the Editor. It is hoped that other companies will send in reports of their efforts along safety lines, which can be published under this heading.)

NEW JERSEY ZINC COMPANY, PALMERTON, PA.

This company has been for some time keenly interested in the safety movement and in general safety work. It has spent many thousands of dollars in furnishing guards wherever they were needed. An elaborate exhibit has been prepared and has been placed in position in New York at the various safety conventions. It was located in Harrisburg at the Welfare and Industrial Efficiency Conferences, and it has been taken even out to Columbus, Ohio, at the recent conference held in connection with the Labor Department of that State. Mr. J. D. James, who is in charge of the safety work of that company, has the active and personal support of all the head officials of the company. He claims that safety work is useless unless all the officials become actively interested and give it their complete support. When this interest has been obtained, it is much easier to obtain the co-operation of the foreman and other employes.

It was largely through the co-operation of Mr. James and Mr. Francis P. Sinn, Superintendent of this plant, that the Traveling Safety Exhibit of the Department of Labor and Industry became a reality. They were among the first to offer a number of different devices for this purpose. At the beginning, these devices formed the main portion of the Exhibit. Now, through the example set by this company, many other concerns have donated devices and pictures for this purpose. Mr. James has originated many devices to prevent a recurrence of accidents, among which might be mentioned the following:

A safety life belt for the use of men who are engaged in unloading hopper cars. This belt was originated a few hours after one man had been killed by slipping down through the hopper and being smothered to death by the material which was being unloaded. Since that time, all men are required to wear the belt under penalty of discharge, and since that time no more deaths from that cause have occurred.

Tongs for holding chisels or drills are another of his safety devices. By the use of these tongs, it is impossible for men holding drills or chisels to be hit with the heavy sledges used in connection with these tools. The number of bruised or broken hands and wrists has been greatly reduced by the use of this simple and inexpensive holder.

Another sort of device is safety wrenches for opening hopper cars. Frequently when men have been attempting to open hopper cars, the wrenches have swung back, hitting those holding them, and causing injuries which have sometimes resulted in death. By means of these wrenches, this chance of accident is eliminated, and the operation is made easier. Drawings of this wrench will be sent if a request for them is made to the company, as the latter are very anxious to advance in every way possible the Safety Habit.

THE ATLAS PORTLAND CEMENT COMPANY, NORTHAMPTON, PA.

The safety work of this company is under the charge of H. T. Raisbeck, chief engineer. He is ably assisted by various other officials and workmen. This company has a corps of safety inspectors, appointed from among the workmen of the various department. These inspectors report all places and practices which, in their opinion, are dangerous and should be corrected. As a result of these recommendations, the company has installed a great number of safety devices for the protection of their men, and with a very gratifying reduction in the number of their accidents.

The Atlas Portland Cement Company was among those who were first instrumental in helping to make the Traveling Safety Exhibit a success. This company furnished signs and safety devices for use at the Allentown and York Fairs last years, and afterwards made models of these devices and presented them to the Department for permanent use in the Traveling Safety Exhibit.

Mr. Raisbeck and those associated with him have perfected many individual guards and safety devices for use around their own plant. Noteworthy among these are an expanding mandril and driver. This device has no exposed projecting parts to catch in workmen's clothing. The driving power is transmitted from the shaft to the sleeve by means of a hardened steel ball contained in a groove in the sleeve. This groove is eccentric to the centre of the shaft, and on rotating the two parts are locked together by means of this ball. This and quite a few other models are among those presented to the Department.

The safety inspectors are fortunate in having the enthusiastic support of the officials. Their work has been productive of much good and has resulted in a reduction in the number of accidents.

PRESSED STEEL CAR COMPANY, McKEES ROCKS, PA.

There are three safety committees connected with the Pressed Steel Car Company, a general committee, and two plant committees, one at each works, McKees Rocks and Allegheny. The general committee, which meets weekly, is composed of the assistant to the general manager, the labor agent, the master mechanic of each plant, the civil engineer and electrical engineer. Each plant committee, which meets monthly, is composed of the master mechanic as chairman, and of foremen of various departments. The plant superintendents are ex-officio members of all the committees.

The plants are divided into districts, and the plant committee is divided into sub-committees of two, to inspect and report on a given district. The personnel of the sub-committees and their district assignments are changed periodically. The general committee considers the reports of the plant committees and any other safety matters which may come up, and makes recommendations for the approval of the general manager.

A fire marshal devotes his entire time to inspection of fire equipment, etc., seeing that apparatus and fire lines are in good condition, passageways clear, etc. He makes regular reports on these matters, as well as on sanitary conditions. Each plant has a closed circuit fire alarm system and a well-equipped fire department made up of employees. Company police patrol the plant day and night, and report on any unsafe or insanitary conditions coming to their notice.

A surgeon, employed by the company, devotes his entire time to the employees of both plants, each of which has an emergency hospital with a competent attendant. Serious eye cases are referred to a specialist in Pittsburgh.

The Labor Department, in addition to their other duties, visit the sick and injured employees at their homes and at the hospitals.

At the McKees Rocks plant, the company has a village, consisting of a large number of double frame houses, a brick apartment house which contains bathing facilities free to all residents of the village, a church, a public school, playgrounds and an assembly hall, known as the Casino, which is used for classes, dances and entertainments of various kinds.

A village superintendent has general supervision of the welfare work and the property in the village. Various organizations among employees promote social and educational pursuits. Classes in Eng-

lish and drawing for men are held under the auspices of the Y. M. C. A. of Pittsburgh. Classes in English and sewing are conducted for women and children under the direction of the Phoebe Brashear Club of Pittsburgh. For a number of years, prizes have been awarded on the Fourth of July for the best kept premises. The results have been most gratifying.

EXITS AND ENTRANCES.

As Inspectors of the Department of Labor and Industry have been making inspections throughout the State, they have observed frequently a lack of attention to exits, entrances and passageways. Too little attention has been given to see that these places are free from obstructions, or would not offer danger in case the occupants of a building, panic stricken by fire or accident, would make a rush for the outside. Frequently passageways have been used as storehouses. Ladders, standing or lying down, cleaning apparatus, tools, trunks, boxes and refuse of all kinds are left there. No thought is given to the fact that these articles might cause people on occasions of excitement to stumble and fall. Others pressing on behind them would trip over them, and serious injury might result to many.

Two instances, which were noticed recently during inspections of factories by Inspectors of the Department of Labor and Industry, are worthy of note:

In one case, an Inspector was on the upper floor of a factory building, and he noticed a door leading out to an overhead bridge to another building. On testing the door latch, he found this open, and started to walk out across the bridge. The manager, who was accompanying him at that time, became very much excited, and calling loudly, said: "Come back. Don't go out there; there are some broken boards on that bridge, and you might fall through." That this bridge should be left in a dangerous condition was something which never should have been permitted. Any employee who had no knowledge of this condition might unnoticed have made an attempt to walk across the bridge. His ignorance, for which he could not be blamed, might have cost him his life. Until repairs had been made so that the bridge was safe, all doors leading to it should have been nailed or fastened shut to prevent possible danger to any person.

Another instance was that of a factory which was located on the second and third floors of a building. The only stairway for exit and entrance ran from the second story to the street at the side of a storeroom. Immediately in front of the stairway at the bottom, and directly behind the entrance door, was located an elevator shaft. Persons who entered and left that building had to use this stairway and were in danger of being hurt by the elevator, as they had to pass directly over the floor of the elevator if it was at the street level, or under it if it was in the upper part of the shaft. If the elevator

had been descending at the time a person opened the door to enter to the stairway, one step forward would no doubt have meant instant death to that person. Likewise, there was a similar danger to people leaving the building by this stairway, unless they had made special note of the location of the elevator. Such a condition was inexcusable, and instructions were immediately given the management to provide some other means of exit and entrance.

Many other conditions of a similar nature might be cited; but it is thought that these two examples will bring out the point that intelligent thought should be given to these matters. Too often in alterations of old buildings, the persons in charge or those making the alterations, lose sight of the safety of the occupants who must use the reconstructed building, and pay attention only to convenience of operation and cost of construction.

HAND LABOR.

One of the most important facts shown by the tabulation of the accidents reported to the Department of Labor and Industry for the year 1914, is the tremendous number of accidents caused by hand labor. Of the 38,126 accidents reported, 20,339, or considerably more than half, were due to this one cause. Under this head are included only such accidents as occurred in connection with the handling and piling of material, such as workmen being struck by falling material, or caught by material, or being hurt while using hand trucks, wheelbarrows or hand tools, and other accidents of a similar nature. They do not include a large number of accidents which occurred to hand laborers by falls, stepping on nails, and accidents due to machinery of all kinds.

The important consideration in studying these figures is that they represent in nearly all cases accidents which could not have been prevented by the use of guards or safety devices. They are caused by the carelessness or indifference of the men themselves, and verify the statement frequently made by students of accident prevention, that less than one-fifth of the accidents can be prevented by guards. The vast majority of these accidents must be prevented by care and thought on the part of the men themselves.

This statement should not be taken to mean that these accidents cannot be prevented, or that the employers are not largely responsible for their reduction. But this reduction must be accomplished not only by providing the men with safe tools and appliances, but also by educating them to use these tools in a safe manner. This education in safety can best be accomplished through the agency of shop safety committees among the workmen. These committees, under the direction of an administrative officer of the company, can properly investigate all unsafe practices or places about the establishment, and make recommendations for their correction, and have in charge all safety activities. By periodically changing the men on these committees, the interest in the movement and the responsibility for its operation can be extended to practically all of the reliable employees.

No establishment is too large, and none too small, to be greatly benefitted by organizing such committees as are suggested above. They present the most effective method for educating all the employees of

an establishment, from president to sweeper, to the necessity of thinking and working for safety. It is only by this thinking and working for safety that the great number of accidents due to hand labor can be successfully reduced.

DEFECTIVE STAIR TREADS.

An examination of causes of accidents which were reported to the Department of Labor and Industry during 1914 show that 3,437 were caused by slipping or tripping. Accidents of this nature are generally due to inequalities or unevenness in the floors, passageways, stairways, etc.

Frequently, inspectors of the Department notice, as they make inspections in various establishments throughout the Commonwealth, that there are very many stairways in a dangerous condition. In some cases, owing to the nature of the establishment, material has been deposited on the steps which makes them uneven. In many instances, wooden stairways are found to be so worn by the constant tramping of many feet, that the treads in some portions are almost worn through. As this worn-out condition is found usually on the front edge of the tread, many manufacturers have corrected this condition by reversing the treads, and using the under side.

The danger which such irregular and uneven surfaces occasion is very seldom realized by the owners of the buildings in question until the matter is called to their attention. Many accidents have been caused by such defects, and, for that reason, the attention of the public is directed to this dangerous condition found in so many places. Frequently, where such conditions exist, no handrails have been provided, and a person tripping on the steps would have nothing to grasp in order to regain his balance. A slight misstep on a stairway without a handrail might result in serious accident, while a similar misstep on a stairway provided with a handrail might have no serious result.

Iron or stone stairways, the treads of which have been worn smooth, are often as serious a menace to safety as ones with defective treads. This condition should also be looked after and means used to correct the defect. In some cases, this may be done by roughing the surface of the steps by suitable methods, or else covering them with material of a "non-slip" character.

The Department of Labor and Industry would, therefore, urge all owners of buildings, where employees or the public are accustomed to using the stairways, to see that these stairways are maintained in a safe condition and are provided with handrails. Where stairs are less than 8 feet in width, handrails should be provided on each side;

and where the width is 8 feet or more, centre handrails should be provided. If these suggestions are carefully carried out, there will be fewer accidents upon stairways in industrial establishments and public buildings.

DANGERS FROM REVOLVING SHAFTS AND SET-SCREWS.

During the year 1914, the Department of Labor and Industry received reports of 38,126 accidents, of which 2,836 occurred in connection with machine work, and 238 of these from coming into contact with moving shafts, pulleys, belts or set-screws. There were 80 cases of crushes and bruises from such causes; 89 cases of cuts and lacerations; and 51 cases of fractures, sprains and dislocations. Sixteen of these accidents were fatal.

In view of the great number of accidents from such causes, the Industrial Board of the Department of Labor and Industry has issued a series of regulations for Power Transmission Machinery. These regulations include standards for set-screws, for keys, for guarding of shafts, for pulleys, etc.

Concerning set-screws, the regulations provide that all projecting set-screws in moving parts of machinery shall be removed and replaced by flush set-screws. Concerning keys: all projecting keys in revolving shafts, where such keys are exposed to contact, shall be made flush or shall be guarded. The above provisions aim to eliminate the danger from protruding parts of machinery; in this case, from set-screws and keys. Any protruding portion of a revolving shaft or pulley is apt to catch in the clothing of a workman, and draw him into the machinery. From such an accident there would result serious injury, if not loss of life. The new type of set-screws, the socket-screw, or screw flush with the outer surface of any part of a machine, does away with such danger. But the old type of screw, if it remains, should be guarded. Concerning shafts: horizontal shafts less than six feet from the floor or working platform level, including dead ends of shafts, shall be guarded or protected by a standard railing, as provided for horizontal belts. Shafts less than twenty feet above floor or ground level, and located over driveways, shall be guarded.

The importance of this latter regulation for the guarding of horizontal shafts may be more readily understood when the story is called to mind of the girl who was arranging her hair at a mirrow hung just beneath a low horizontal shaft in a factory. In throwing her hair back, it became entangled in the shaft. Had not the machinery been stopped in time, it is probable that her scalp would have been torn from her head.

Concerning vertical shafts, the regulations are as follows: vertical shafts shall be encased or guarded to a height of six feet from floor or working platform, or be guarded by a standard railing with not less than 15 inches clearance. Concerning pulleys and belts and other parts of power transmission machinery, there are also careful regulations as to safe construction or guards to protect dangerous parts.

The Department of Labor and Industry is using all the means in its power to organize safety movements and to stimulate the public mind to constructive methods in the furtherance of industrial safety. Copies of the regulations of the Industrial Board, on the subject of safeguarding Power Transmission Machinery, or other machinery, may be obtained by applying to the Department of Labor and Industry, Harrisburg, Pa.

INJURIOUS EFFECTS OF DUST.

One of the most injurious factors in any industry is the dust created by the various processes; but, as important as is the elimination of dust to the health of the workmen, very little has been done in the way of accomplishing such an elimination. Only of recent years have our employers realized their responsibility for the physical condition of their employees, as affected by the processes at which they work; or realized the economic value to them of maintaining employees in good health.

Dust has been left without special consideration, since, from the popular standpoint, it is merely "dust." But a careful examination of the effect of dust in industries upon the health of workmen who are constantly exposed to its presence, has proven it one of the chief causes of physical disturbances.

Dust consists of small particles of matter that float about in the air. No air is entirely free from it; but in industries where dusty processes are continuously being carried on, the air is overcharged with dust at all times. The human body is so constructed as to resist injurious substances to a remarkable degree; but when a constant strain is put upon it, its power of resistance decreases to the point where injurious effects rapidly develop. In any dust-creating process in an industry, a workman in good health may withstand injurious effects for a considerable period, but at last will yield to a slow but progressive undermining of health.

Dust creates ill effects in different ways according to its nature. Some kinds of dust, such as that produced in lead trades, are absorbed into the system, through the skin or the lungs, or by getting into the stomach with the food. If this dust is of a poisonous nature, it may create serious disease in such a manner. Other kinds cannot be absorbed, but are irritative to the membranes and tissues. Dust that is composed of sharp bits of matter may enter the eyes and create inflammation, or into sores upon the skin, or cause inflammation in the mucous membranes of the nose and mouth. It takes considerable time for dust of any sort to penetrate deeply into the lungs and do serious injury to them; but this, after a time, also takes place. Statistics show great numbers of death from pulmonary phthisis among the workers in dusty trades. One table of mortality statistics reports 2.39 per cent of deaths due to phthisis per thousand in occupations without dust, against 5.42 per cent due to phthisis per thousand in dusty trades.

An indirect injury from dust is from explosions that are apt to occur in industries where the air is loaded with explosive dust, such as coal dust or dust from grain. This dust, coming into contact with sparks, or open flames, or heated metal, is likely to explode and do great damage, and perhaps injure workmen in the vicinity of the explosion. Many such accidents have occurred, which prove the importance of eliminating explosive dust from the atmosphere of any building or enclosed area.

Careful methods for eliminating dust from our industries would greatly improve the health of employees. The isolation of the dusty processes in separate buildings or rooms would prevent the spreading of dust through a whole building. The placing of exhaust hoods over the machinery and a careful exhaust system would carry off a great deal of this injurious matter. Also the moistening of materials and the damp cleaning of a dusty room, in fact, the use of water in general to keep dust from spreading, is one of the cheapest remedies, where it is possible to use it, for much of the difficulty. The use of vacuum cleaners is one of the best ways of removing dry dust. The proper construction of a building also aids in such an elimination of dust. Polished surfaces, slanting sills, sloped covering for beams, and other such devices would prevent dust from accumulating in neglected places.

An important factor in the protection of the workman from dust is the sort of clothing he wears, and the proper cleansing of the skin. In some industries where there are exceptionally dusty processes, the employers provide a regular uniform for employees, which is made of material woven very tightly so as to prevent dust from penetrating it. Special shoes and gloves are provided in many such places. Respirators are also provided. Workmen object to these latter appliances, however, because so far no respirator has been invented which is entirely comfortable for any length of time.

One of the best ways of preventing injury from dust is by habits of personal cleanliness. In industries where wash rooms are provided, with warm water, soap and towels, and a supervisor to see that the washing process is thorough, much danger from dust is removed.

Medical examination at regular intervals is an essential measure for safeguarding against diseases that are likely to arise from the constant exposure to injurious dust. An examination that shows physical injury to a workman from a certain process should result in that workman's removal to another task, until the symptoms are destroyed by proper treatment. An interchange of positions where a process is likely to be injurious if worked at during long periods by one employee, is one of the best means of preserving the health of the workmen.

The Department of Labor and Industry is doing all in its power to aid and encourage all improvements in the industries of our State which tend towards the protection and preservation of the health of the employees. This is a subject of vital importance to the Commonwealth, and deserves the thoughtful interest of every person. It is hoped that in a very short period of time the State may attain to the most improved hygienic conditions throughout its industries.

PROSECUTIONS DURING 1915.

The Department of Labor and Industry is especially gratified by the willingness with which the laws and regulations under the jurisdiction of the Department have been complied with. The instances have been rare in which prosecutions have been necessary.

The following table shows the number of prosecutions ordered during the first three months of 1915. While the number each month is not large, it is hoped that it may become much less as the year progresses.

	Violation of woman's law.	Illegal employment of minors.	Violation of bake-shop law.	Miscellaneous.	Total.
January,	5	5	.....	1	11
February,	10	3	2	.....	15
March,	6	3	2	.....	11
Total,	21	11	4	1	37

Vol. I No. 10

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

FIRE PREVENTION

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

REGULATION FOR FIRE PREVENTION.

Smoking is prohibited in every work room or stock room in any factory or work shop in this Commonwealth in which readily combustible material is used, handled or stored, and in other parts of such factories where there is an equal fire hazard.

JOHN PRICE JACKSON, Chairman.
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,

Adopted January 21, 1915. Industrial Board.

Vol. I No. 11

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

CANNERIES

OPERATIVE ON AND AFTER APRIL 15, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

CANNERIES

The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—The word "FACTORY" as herein used shall mean any structure, building, shed or place used for, or in connection with, the preparation, canning or packing of food stuffs.

PLACE:

(a) Factories preparing food products shall be located so as to be able to receive and distribute their products promptly without danger of damage or deterioration and shall not be located in the immediate vicinity of any other industry which may be objectionable because of noxious odors given off or because of the use of decomposed products.

(b) No factory shall be located in an insanitary place or in a place which cannot be made sanitary or maintained in a sanitary condition.

(c) No factory shall be located where the refuse from the plant cannot be disposed of in a sanitary manner, and where such refuse will of itself become a nuisance to the factory.

(d) No litter, waste, refuse, or decomposed products shall be allowed to accumulate in or around the buildings or yards. All liquid waste shall be conducted from the building by means of suitable drains. Gross by-products suitable for other usage, as pea vines or corn husks, may be stacked or placed in silos separate from the building but must be surrounded by a tight drain to intercept any oozing liquid. Other by-products may be retained only if rendered unobjectionable. Raw tomato skins, cores, etc., shall not be permitted to be piled near the factory, nor to be distributed on the land within 500 yards of the factory unless thinly spread.

(e) All factories used for the manufacture of food products shall be clean, properly lighted and ventilated. The ceilings shall be of sufficient height to permit ample clearance for all work under any suspended shafting, hangers, piping, galleries, etc. Where natural light and ventilation are insufficient, provision shall be made for augmenting the same by mechanical methods. The interiors for all working rooms shall be kept a light color by paint, whitewash or other suitable method.

(f) The floors shall be tight and pitched to accommodate the machinery—that is, to confine overflow and waste to the smallest area. Gutters shall be provided to carry all waste to sewers.

(g) Grating of sufficient height to insure free drainage shall be provided around cookers, washers and at other places where overflow is unavoidable.

(h) At least one seat shall be provided for every three females employed or permitted to work and all such seats shall, during working hours, be conveniently accessible to the workers for whose use they are intended.

OPERATION:

(a) Any person, firm or corporation now engaged, or intending to engage, in the canning industry shall demonstrate to the satisfaction of the Department of Labor and Industry that the proposed factory and its preparation for operation conform to the regulations issued by the Industrial Board for the government of such business. If such conditions have been met the Commissioner shall authorize the operation of said factory by a certificate of permission good for one year only and revocable at any time for failure to obey said regulations.

WATER-CLOSETS AND PRIVIES:

(a) Water closets and privies shall be ventilated to the outside and properly lighted and a separate hopper or seat shall be provided for each twenty-five persons using said water closet or

privy. Where water closets are in factories they shall be provided with proper flushing apparatus and connected with a sewer. Privies will not be permitted in or in direct connection with a building.

(b) The entrance to every water-closet or privy compartment shall be screened by a vestibule or by a stationery screen at least two (2) feet wider than the entrance door, extending to a height of at least six and one-half ($6\frac{1}{2}$) feet.

(c) Water-closets and privies, including the walls, floors, ceilings and fixtures shall be kept clean and where a privy is used, sufficient slack lime or equivalent disinfectant shall be used each day to prevent odor.

(d) Every privy vault shall be built with water-tight wall extending at least two feet below and one foot above the surface of surrounding ground, being so covered as to exclude flies.

(e) Every privy shall be ventilated by an unobstructed opening to the outer air, other than the door, which has an area of at least one hundred and forty-four (144) square inches. Every privy shall be provided with a door. Every window and ventilating opening of a privy shall be protected by screens to prevent the entrance of flies, and every door shall be provided with a self-closing device to keep it closed.

(f) Dry walks shall be provided from the plant to outside privies.

PROTECTION AND SAFETY:

(a) All power driven machinery shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gearing, belts, revolving and reciprocating parts or projections guarded as specified in Safety Standards, Volume I, No. 1, of the Industrial Board, covering the Transmission of Power.

(b) All platforms, balconies, and galleries six feet or more above floor level, floor openings, and hoistways, fly wheel and pulley pits, and all other openings in floors and platforms where the

safety of persons below is involved, shall be guarded as specified in Safety Standards, Volume I, No. 2, of the Industrial Board, governing the erection, construction and maintenance of Standard Railings and Toe Boards.

(c) All lathes, planers, milling machines, boring mills, metal saws, keyseating machines, shapers, slotters, gear cutters, drill presses, etc., shall be guarded as specified in Safety Standards, Volume I, No. 4, of the Industrial Board on Machine Tools.

(d) All factories above the first story shall be provided with proper ways of egress, or means of escape from fire, sufficient for the use of all persons accommodated, assembled, or employed therein; and such ways of egress and means of escape shall be kept free from obstruction, in good repair, and ready for use, at all times; and all rooms above the second story in said factories shall be provided with more than one way of egress, or escape from fire, which shall be placed as near as practicable at opposite ends or sides of the room, and leading to fire escapes on the outside of such factories or to stairways on the inside. Where any of said factories is designated for the use or occupancy of fifty or more persons, the external doors of the same shall open outward, and be so constructed or arranged as to afford, when open, an unobstructed external passageway of not less than five feet in the clear, and shall have landings, inside of the external doorways, of dimensions not less than four feet between the external doors and the adjoining stairways, said landings to be of a width not less than the stairway approach thereto.

SANITARY PROVISIONS:

(a) A sufficient supply of cool potable water shall be provided at all times. The use of common drinking cups is prohibited.

(b) No wearing apparel not in actual use shall be permitted in workrooms either where food is prepared or placed in containers.

(c) No person suffering from a communicable disease shall be employed. Persons working in food factories shall be subject to medical inspection under the supervision of the Department of Labor and Industry.

(d) Outer clothing including head covering used by food preparers shall be of washable material and shall be kept clean at all times.

(e) Washing places in work-rooms shall be provided conveniently located and of sufficient size and equipment for the accommodation of all employees. Such washing places shall be equipped with a sufficient supply of water and provided with individual towels and plenty of soap.

REST AND DRESSING ROOM:

(a) In all factories employing or permitting females to work, a suitable wash and dressing room for their use shall be provided so located as to be accessible to such females; and shall be separated from the rooms in which employees work by partitions extending from floor to ceiling; and such rooms shall be furnished with sufficient hooks for the accommodation of the wearing apparel of said females when not in actual use; and shall be provided with a couch and sufficient seats, and washing facilities to accommodate all females. The housing conditions in all labor camps shall conform to the regulations issued for the same by the Pennsylvania Department of Health.

Note:—In addition to the foregoing regulations, compliance with which is required by law, the Industrial Board strongly recommends the observance of the following:

MACHINERY AND EQUIPMENT:

(a) Machinery and other equipment shall be of a sanitary type and of such material as to admit of cleaning. All tables shall be plain and without sharp angles. Peeling and quartering tables shall be properly drained. All tanks of water in which a product is held before filling into cans shall be provided with a continuous supply of fresh clean water, and with an overflow.

(b) No scalder or blancher shall be used continuously that is not cleaned at least twice a day. Only potable water shall be used in making syrups or brine or in washing equipment coming in contact with food. No cans shall be brined or syruped by passing through a tank to receive the brine, syrup or water by submergence (dip tank). No syrup, brine or the overflow from a syruping machine, shall be used without filtering and heating to the boiling point. Means shall be maintained at all times for the proper cleaning of all floors, tables, machinery and equipment.

(c) All machines and conveyors shall be provided with self cleaners. All tables, pails, pans, trays, machines, etc., shall be cleaned with steam or hot water at least once each day and as much oftener as is necessary to prevent souring or insanitary conditions.

PERSONAL SANITATION:

(a) The smoking, snuffing or chewing of tobacco or snuff, the open blowing of the nose, expectoration, wetting finger in the mouth and all other insanitary personal practices are forbidden and plain notices to this effect shall be conspicuously posted.

JOHN PRICE JACKSON, Chairman.
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Adopted February 24, 1915.

Vol. 2 No. 4

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

APRIL, 1915

HARRISBURG, PA.:
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Division.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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LETTER OF INFORMATION.

The following letter has been sent out by the Department recently to employers throughout Pennsylvania.

TO EMPLOYERS OF CHILDREN BETWEEN THE AGES OF FOURTEEN AND SIXTEEN.

Gentlemen:—

The Governor's Child Labor Law recently enacted takes effect January 1, 1916. I believe that a majority of the manufacturers and other employers of labor are in full sympathy with this legislation. Nevertheless, there are important reasons for writing this communication concerning it. One of these is based upon the need of your earnest and hearty cooperation, if the law is to bring the beneficent results to both labor and industry for which it was framed; another arises from the fact that many misleading and untrue statements have been widely expressed concerning it, which, if believed, might lead to such misapprehension and lack of confidence as would make impossible the necessary cooperation. The new law makes three primary changes in the employment of children under 16 years of age. They are in essence as follows:

EMPLOYMENT CERTIFICATES.

1. The Employment Certificate, instead of being given to the child, under the new law must be sent by the school authorities to the employer, by whom it must be returned to the school authorities when the child stops work. Under the new system, the employer and the school authorities jointly become supervisors of a boy or girl during working or school hours.

The new law also requires that a child shall be examined physically so that before a certificate is issued it may be determined whether he or she is fitted for the character of work desired. Practical experience has shown that this will save many children from permanent injury and also relieve the employer from the chance of putting a young person to work for which he or she is physically unfitted.

NINE HOUR DAY.

2. The law reduces the hours of labor per day to nine. This is a step towards the standard set by modern civilization. Most of the highly civilized countries and many of our own states have adopted eight hours as a proper limit for working children between the ages of fourteen and sixteen. Moreover, the consensus of experience has shown no insurmountable or even serious difficulty in adjusting industrial procedure to this humane and economic limitation to child labor.

The legislative action of various foreign countries and practically all of our more important industrial states which limit the employment of children to eight hours per day has been brought about largely through the practically unanimous sentiment of the medical profession of this and other countries and the general trend of thought among peoples of advancing civilization. The Governor, however, felt that the provision in our law for the establishment of continuation schools would warrant our State in making a nine hour day rather than adopting the generally accepted eight hour day.

CONTINUATION SCHOOLS.

3. The third and unquestionably the most important element of the law is that which requires children between the ages of fourteen and sixteen to attend continuation schools for eight hours per week. This provision of the law makes possible not only advantageous development of the child itself, but the resultant production of *more skilled and competent employees* for the industries. It is distinctly in line with accepted practice on the part of certain states in this country and a fully established and proven policy in certain of our most advanced industrial foreign countries.

Indeed, in this country many manufacturers have found such part time instruction so valuable that they, themselves, have gone to the trouble and expense of creating and maintaining such schools; paying the salaries of teachers, purchasing supplies, providing school-rooms, and also paying the young people their wages while in school. If in our own country there are many large employers of labor who find it worth while to go to the heavy expense thus involved, how much more can the manufacturers of the State afford to go merely to the trouble of re-arranging schedules so that their children may attend publicly supported schools of the same nature?

If you are unfamiliar with this subject, I believe an investigation of the educational work of the Westinghouse Electric & Manufacturing Company, the Pennsylvania Railroad at the Altoona Shops, the United States Steel Corporation, or any other establishments where such schools are being carried on by progressive corporations will produce information which will prove wholly convincing. I also suggest that a letter to Dean Louis E. Reber, Secretary of the Industrial Education Commission, Madison, Wis., would bring an answer showing the entire practicability of the State's carrying on part time schools for boys and girls who are at work. A letter to the school authorities of the city of Cincinnati would also likely cause a reply which would emphasize the value of educational activity of this kind by a city.

It may also be interesting to note that the *United States Manufacturers' Association has been earnestly advocating and urging the adoption of part time or continuation schools for working boys and*

girls, and an inquiry addressed to Mr. H. E. Miles, of Racine, Wis., who has been in charge of the work for that Association, should bring much valuable information in regard thereto. Further information of broad and detailed character can be obtained from the Secretary of The National Industrial Education Association, the membership of which is in very large proportion made up of the most progressive and successful manufacturers of this country.

CO-OPERATION INVITED

To establish these schools the sum of approximately one million five hundred thousand dollars ($1,500,000) has been appropriated by the Legislature. It is hoped to have them in readiness to open by January first next. All the details are being worked out by the Vocational Education Bureau and the State Department of Public Instruction.

The project is a large one and in order to accomplish it properly there must be perfect team work and harmony between the employers of children in the various communities, and the educational authorities. To forward this, the Vocational Education Bureau suggests that the business men in the various cities, boroughs, and townships appoint representatives to consult and advise with the Board of Education in their various communities, and aid in bringing about a practical and workable solution of this problem which will help the individual community. (Further information concerning this subject may be obtained by addressing that Bureau at Harrisburg, Pa.)

As representing a department having not only more or less to do with the administration of this law, but directly responsible for industrial welfare, I earnestly ask your hearty cooperation in arranging in this and other ways to put this law into force with the greatest possible effectiveness and the least friction and difficulty in your community.

The Governor and this department are firmly convinced that the law will not only be most beneficial to the children, but will result in greatly advancing the possibilities of industrial prosperity in this Commonwealth.

It is well to add further, that this new law was passed almost unanimously by the Legislature after those who were opposed thereto had been given and accepted every opportunity to present arguments against it. The discussions were public and printed in practically every newspaper in the state. The comments thereupon were such as to indicate that the law represents the sentiment of the great majority of the people of Pennsylvania. Since we have thus strongly

expressed our thought let us now with equal earnestness give the system a thorough and conscientious trial.

Yours faithfully,
JOHN PRICE JACKSON.

ABSTRACT OF NEW CHILD LABOR LAW.

The Child Labor Law, passed by the 1915 Session of the Pennsylvania Legislature and approved by Governor Brumbaugh, May 13th, 1915, materially changes the conditions under which children may be employed in Pennsylvania.

Probably the most important single feature of the new law is that providing for continuation schools. These schools must be attended for eight hours each week by minors between the ages of fourteen and sixteen years. The schools, themselves, are to be approved by the State Superintendent of Public Instruction and to be located either in the establishment where the minors are employed or in a school building or other building designated by the school directors of that district. The only cases in which minors between the ages of fourteen and sixteen will be excused from attending these schools are those where the continuation schools have not been established within reasonable distance from the place of employment of the child. The employers of minors required to attend these schools, must permit them to be away from work and attend the schools during regular school hours and the schools are not to be held on Saturdays or after five o'clock in the afternoon or before eight o'clock in the morning.

As in the old Child Labor Law, no minor under the age of fourteen years may be employed in any establishment of any kind, but the new law goes further and requires that no male minor under twelve years of age and no female under twenty-one years of age may sell newspapers, magazines or merchandise of any kind, in any street or public place, and that no male minor under fourteen years of age, and no female under twenty-one years of age may work in any street or public place at any trade or occupation, such as bootblacking etc.

The law further provides that, where children are working on the street or in public places as permitted above, that boys under sixteen years of age and girls under twenty-one years of age shall not work before six o'clock in the morning or after eight o'clock in the evening.

The hours for labor for children under sixteen years of age has been reduced to fifty-one hours per week and nine hours per day. The eight hours allowed for school must be included in this fifty-one hours per week and nine hours per day. The law also requires that no minor under sixteen years of age shall be employed before six o'clock in the morning or after eight o'clock in the evening.

Employment certificates are required for minors between the ages of fourteen and sixteen years as heretofore, but the method of issuing the certificates has been considerably changed. Under the new law, the application for an employment certificate must be made by the parent or guardian of the minor or, if the minor has no parent or legal guardian, then by some one more than twenty-one years of age. This application must be made to the Superintendent of the school district or to the Secretary of the School Board in the district where the minor lives.

Under the new law two classes of certificates are provided for; a general employment certificate and a vacation employment certificate. The general employment certificate entitles the minor to work on any day, except on the regular school days.

In order to receive a general employment certificate, the minor must present to the school authorities the following papers:—

(a) A statement signed by the prospective employer, stating that he expects to hire the minor, and setting forth the kind of work and number of hours per day and per week during which the minor will be employed.

(b) A report from the principal of the school which the minor last attended, stating that the minor had completed the sixth grade in school.

(c) A certificate of physical fitness from a physician approved by the school board, stating that the minor has been examined by him and is physically qualified to do the work for which he is applying.

(d) Proof of the minor's exact age. This proof must be by means of a birth certificate, baptismal certificate or in case of an immigrant, a passport. In case none of these proofs or other documentary evidence is available, the statement of the examining physician, accompanied by the affidavit of the child's parents, may be accepted.

In order to procure a vacation certificate, the same papers are required as for a general employment certificate, except that the minor is not required to have finished the sixth grade in school and it is not necessary for him to present a statement from the principal of the school which he last attended.

When either class of certificate is issued, it can only be used for work in the establishment of the employer named in the certificate and is mailed by the school authorities directly to this employer. In case the minor leaves this employer, the certificate will be returned by him to the school authorities and if the minor secures employment elsewhere, a new certificate will be issued in the same manner as the original one was issued, with the exception that it will not be necessary to present a second proof of age or a second statement from the principal of the school which the minor attended.

This law specifically points out a number of machines as being dangerous and does not allow minors under sixteen years of age to operate them or assist in their operation. These machines which minors under sixteen years of age are not permitted to operate are the following:—"Paper-lace machines, job or cylinder printing-presses operated by power other than foot-power; stamping machines used in sheet metal and tinware or in paper or leather manufacturing, or in washer and nut factories; metal or paper cutting machines; corrugating-rolls, such as are used in making corrugated paper, or in roofing or washboard factories; dough-brakes, or cracker machinery of any description, wire or iron straightening or drawing machinery; rolling-mill machinery; power punches or shears; washing or grinding or mixing machinery; calender-rolls in paper and rubber manufacturing, or other heavy rolls driven by power; laundering machinery; upon or in connection with any dangerous electrical machinery or appliances. Nor shall any minor under sixteen years of age be employed or permitted to work, in any capacity, in adjusting or assisting in adjusting any belt to any machinery, or in proximity to any hazardous or unguarded belts, machinery, or gearing, while the same is in motion; nor on scaffolding; nor in heavy work in the building trades; nor in stripping, assorting or manufacturing tobacco; nor in any tunnel; nor in a public bowling-alley; nor in a pool or billiard-room; nor in the manufacture of paints, colors or white-lead; nor in any capacity in preparing compositions in which dangerous leads or acids are used; nor in the manufacture or use of dangerous or poisonous dyes; nor upon any railroad, steam, electric or otherwise; nor upon any boat engaged in the transportation of passengers or merchandise; nor in operating motor-vehicles of any description; nor in any anthracite or bituminous coal-mine, or in any other mine; nor about blast-furnaces; nor in or about any distillery, brewery, or any establishment where alcoholic liquors are manufactured or bottled."

The following employments are prohibited for minors under eighteen years of age:—"The operation or management of hoisting machines, in oiling or cleaning machinery in motion; in the operation or use of any polishing—or buffing-wheel; at switch-tending, at gate-tending, at track repairing; as a brakeman, fireman, engineer, or motorman or conductor, upon a railroad or railway; as a pilot, fireman, or engineer upon any boat or vessel; in or about establishments wherein gunpowder, nitro-glycerine, dynamite, or other high and dangerous explosive, is manufactured or compounded; as a chauffeur of an automobile or an aeroplane."

The law further provides that no person under twenty-one years of age "shall be employed or permitted to work in any saloon or bar-room where alcoholic liquors are sold," and that no person under

twenty-one years of age shall be employed as a messenger of any kind before six o'clock in the morning or after eight o'clock in the evening.

As in the old law, the employers of minors under the age of sixteen years must keep posted a printed copy of the abstract of the labor laws and a list of all minors under the age of sixteen years, employed in the establishment. These printed notices may be procured from the Department of Labor and Industry.

Copies of the Child Labor Law will be furnished in any quantity if application is made for the same to the Department of Labor and Industry, Harrisburg.

(This act goes into effect January 1st, 1916.)

NATIONAL SAFETY COUNCIL.

FOURTH ANNUAL CONGRESS.

The Executive Committee of the National Safety Council announce that the Fourth Annual Congress of the Council is to be held in Philadelphia, Penna., on October 19-21, 1915, at the Hotel Bellevue-Stratford.

The tentative plan provides for two Sessions daily; comprising a Business Session, a General Session, Sectional Meetings, and Round Table Discussion.

Sectional or special "Round Table" Conferences are to be meetings at which special topics are to be discussed as of interest to separate groups, such as Railroads, Foundries, Textile, Public Safety, etc., or particular safeguarding problems such as crane protection, electrical construction, elevators, shafting and belting, etc.

Several of such Sectional or Special Meetings will be conducted simultaneously in separate rooms; the topics not to overlap.

A small Exhibit is in course of preparation to emphasize particularly the Educational and Organization aspects of Accident Prevention.

This Congress should be a forum for the discussion of the latest developments in Accident Prevention Work, and an opportunity to seek light on old problems.

Copies of the completed Program of the Congress will be ready for distribution about 1st. September next; and copies may then be had on application to Mr. W. H. Cameron, Secretary, National Safety Council, 208 South La Salle St., Chicago, Ill.

THE NECESSITY FOR REST AND RECREATION.

As the matter of efficiency of employees is studied with greater attention by the manufacturers, it is found that a proper amount of rest is a necessary condition in order that employees may perform their maximum amount of work. It has been a common practice in the past to ask employees to work overtime daily; in fact, very little attention has been paid as to whether they had any rest or recreation whatsoever. The fact that a large number of orders had been placed and that it was necessary to fill them seemed to be the only thing which was considered. To-day, however, we find a great change in the attitude of most manufacturers. They are beginning to realize that not only must an employee have proper and substantial food in order to perform his work efficiently, but that it is also necessary for him to have a proper amount of rest and recreation. Long hours, without a sufficient amount of rest, tend to make a man sluggish in his movements, and often careless. From this latter standpoint the subject can properly be considered as a safety measure.

This fact was brought forcibly home to one of the inspectors of the Department recently. He had occasion to visit a certain social centre in one of the towns of this State, and while there he noticed a young man, of apparently twenty years of age, whose hand unfortunately was disfigured by the loss of the thumb and first two fingers. This young man, when seventeen years old, had been employed in a paper box factory. At one period of the year, when there was a great rush for orders and a shortage of help, the employer had asked him to work a large number of hours overtime. During a period of six days, this employee put in eighty hours, an average of thirteen and one-third hours per day. At the conclusion of the sixth day, Wednesday, at nine o'clock in the evening, the young man was so completely exhausted by the number of hours he had worked that he became careless and allowed his hand to slip into the cutting machine. In an instant his fingers were cut off and for the rest of his life he will be hampered in the use of his left hand. The young man was very emphatic in his assertion that the injury was due entirely to the fact that he had become exhausted by prolonged labor.

The employers have been careless concerning the number of hours worked in a day by their employees and also concerning the number of days worked in a week. Clerks and stenographers in our indus-

tries have Sundays and legal holidays free from work and are usually given a vacation of a couple of weeks in the summer, but the majority of the people who work in industrial establishments often have no holiday upon which they can depend, not even the one day in seven, the universal rest day. The importance of holidays, however, is not so great as periods of relaxation during the routine of a single day's work.

Recent laws, enacted by the Pennsylvania Legislature, fix limits to the number of hours of labor of females and of minor males; but the number of hours during which an adult male may work is still left to the discretion of the employer. The law has also fixed the number of hours that women and girls may work without a rest period. For boys and men, this important matter has not been considered. It is true that a man is physically more robust than a woman, but it is not true that his physical endurance is as unlimited as is often assumed.

It has always been recognized that free periods for meals were essential to the health of employees, but that regular periods of rest should be allowed would seem probably to the majority of employers a needless waste of time and money. That this is far from the truth has been proven in many instances which show that these periods of inactivity resulted in an increase. It is a principle well established in psychology that a continued activity of any kind, without breaks in the motion, tends to become less and less efficient as it progresses. A rest period at well-chosen intervals restores not only the bodily muscles from fatigue, but also enables the mind to take a fresh start and attack the resumed task with new energy and interest. If, however, long continued activity to the point of fatigue and beyond it, is required, the rest period necessary to recuperate the exhausted nerves and muscles would have to be much larger. Activity without sufficient rest periods tends gradually to the breaking down of the physical well-being of the worker—and too long a strain of this kind is apt to result in permanent bodily injury.

The most economical method for both employer and employee in the apportionment of the daily hours of labor is a carefully planned schedule of rest intervals, chosen to break the period of activity at times best suited to restore the varying amount of energy expended by the various tasks. If the physical endurance of the worker has been too severely taxed, recuperation is sometimes impossible. But, on the other hand, if rest is systematically taken, the body is kept constantly in good condition; the loss of energy through brief periods of exertion is easily restored in short periods of rest.

Fatigue has also graver consequences than merely the exhaustion of the body, because this latter condition has also its bad results. There have been many accidents, the cause of which has been traced to the exhaustion of the worker. A tired worker is lax in attention, and as many operations depend for their safety upon careful attention, a lack of this often results in serious injury. This fact has been illustrated by the story related in the beginning of this article.

Then, also, the body in a state of fatigue is more liable to disease. In industries where the processes are dangerous to the health of employees, cases of industrial poisoning appear among those who are physically exhausted by long hours and hard labor, while among employees whose hours are shorter and work less fatiguing, signs of disease appear much less frequently.

Considering then the importance of maintaining physical energy well above the margin of fatigue, the employer who wishes to safeguard the health of his employees will find that shorter hours of labor and carefully planned rest periods, and holidays at regular intervals, will mean greater efficiency, a larger output, a lessening of accidents and illness among his employees; to say nothing of the reward of good will and contentment on the part of the workers.

THE EFFICIENCY VACATION.

F. L. Benedict, Elliott-Fisher Company, Harrisburg.

Allotting vacations to great numbers of employees is a problem. Like many serious problems that confront large business institutions the vacation question is handled in the same way, time after time, year after year, purely as a matter of precedent. There are many disadvantages to the old way of assigning vacations which splits the working force into relays, with one or another group away during the summer months, from June until September, so that during this time the force is never complete.

In any well managed business there should be just a sufficient number of employees in each department to do the work of that department rapidly, accurately and economically, under normal conditions. It stands to reason then, that robbing each department of some of its workers for a period exceeding a quarter of the year, disorganizes, retards, and confuses, and is detrimental to the best interests of the entire business. Such vacation methods increase mistakes, slow up deliveries, interfere with accounting, disorganize discipline, reduce sales, affect credits, retard customer service and in general demoralize.

The planning of vacations for a large force of employees under the old ways means an endless detail of work for certain executives who make up the schedule. Particularly is this so in the kinds of business that have many departments or branch offices or houses. Each department and each branch must have the employees carefully selected for each two weeks of the entire summer so that these departments and branches will be handled as nearly efficiently as is possible under such a system. Feelings of dissatisfaction and resentment are often fostered among the employees because they cannot have their vacation at some particular desired time. From this standpoint the vacation may be looked upon by the employer as a necessary evil and by the employee as a period of two weeks' absence from business resulting in overwork and congestion for at least a part of the balance of the summer. The customer also comes under the spell. Mistakes are made on his orders and deliveries go astray. He calls up or writes for information and is told he cannot have an answer for two weeks because the man who knows has just left on his vacation.

The Efficiency Vacation, so named by the Elliott-Fisher Company trends to make vacation time a pleasure to everyone without interfering with business all summer. The Elliott-Fisher Company of Harrisburg, Pennsylvania, manufacturers of The Bookkeeping Machine, originated the Efficiency Vacation in 1911. In that year it was conducted as an experiment, but proved so eminently satisfactory regardless of its newness that the same plan has been followed each successive year. As a result of this beginning, there are today scattered all over the United States many large business concerns which have adopted exactly the example of the Elliott-Fisher Company.

With its large factory and general offices in Harrisburg and branch offices in the principal cities of the United States, the Elliott-Fisher Company found the old vacation system a difficult problem to handle. A great deal of thought and time had to be devoted to allotting the vacations. In each branch office and in the general office there was duplicating over and over again the same work. Executives at the general office found it necessary to spend hours, even days, over the vacation plans to see that each branch was properly manned or as nearly properly as possible throughout the entire summer. Each Elliott-Fisher office from Portland, Maine, to Portland, Oregon, and from Duluth to New Orleans had its vacations planned so as not to interfere any more than could be helped with the general business routine. It required a great deal of study and care to revolutionize the old system of allotting vacations so as not seriously to interfere with business.

For many years before 1911 the Elliott-Fisher Company had closed its factory for two weeks and given the employees that amount of rest without pay. This offered opportunity for the thorough overhauling of the factory equipment. Emergency orders could be attended to at this time by keeping on a very few assistants. The general vacation idea had its birth in the partial one. It was decided that all the departments could be closed for two weeks with advantage to the work in general. Not only the employee, but the business itself needed a vacation for efficiency to avoid the condition of summer disorganization.

It was any easy matter for the President to issue orders to close the entire works of the Company, but it was problematic as to what effect this would have upon patrons. In order to offset any complaints that might arise from customers, a notice was sent out three months in advance of the vacation. Following is the notice that is being sent this year and this varies but slightly from the original:

VACATION NOTICE.

"The employees of our general office, factories and sales offices everywhere will take their annual vacation from Saturday night, July 24th, to Monday morning, August 9th, this year.

Emergency orders for new equipment, supplies or repairs, received by mail or telephone, will be cared for during this time as at other periods of the year."

This notice had the desired effect. And, as strange as it may seem there has only been one complaint from patrons during the vacation time. It is a satisfaction to the Elliott-Fisher Company's customers to know that for fifty weeks of the year their orders will have the same relative care. The efficiency of the new vacation idea was recognized in all corners of the country and letters were sent in from business houses everywhere inquiring about the Elliott-Fisher plan.

It is not reasonable to take it for granted that every business can adopt this method of handling vacations, but there are numerous companies who can adopt it and obtain the same satisfactory results that have been acquired by the Elliott-Fisher Company. Many large businesses have already adopted the closing of their entire business for a definite period. The Efficiency Vacation has attracted such wide attention that "World's Work" exploited it in the August, 1914, number and the following is quoted from that article:

"A good many factories such as the Brown & Sharpe Manufacturing Company, of Providence, R. I., close down for two weeks during the summer season for an Efficiency Vacation. At this time cleaning is done, repairs are made, new machinery is installed, and the old is generally overhauled and put into condition. The Elliott-Fisher Company once utilized this time to move its whole outfit of machinery to another plant so that when the employees returned to work they simply took up their tools in different surroundings and went on working with no delay.

"Many factories have a slack season at some part of the year, when the work automatically stops, or nearly so, with results much the same as those obtained by the Efficiency Vacation. Shoe factories close for two weeks twice during the year, at the end of their semi-annual "runs" of work. Clothing factories clean and reorganize their workrooms while the workers are idle, waiting for the new styles that will again set designers to planning and sewing machines to humming.

"But in straight office work the Efficient Vacation can be managed as well as in factories. For example, the Alexander Hamilton Institute sends out notices to its patrons very similar to the one quoted

at the beginning of this article, (Elliott-Fisher Notice) and shuts up shop for two weeks in late summer. All the office employees go off to take their ease, except one or two responsible persons who are left to handle any money that may come in and to answer any urgent orders or requests for information.

"By giving the vacation to all at once, the continuity of the office, its first essential, is preserved. The work simply cannot be laid down in segments, to be taken up by unaccustomed hands or to be neglected for a period, and continue efficient.

"The Baker-Vawter Company, of Benton Harbor, Mich., has adopted the Efficiency Vacation among its sales force. This firm employs about one hundred salesmen. Of these, during the last two years, eighty-five or ninety have taken their vacations during the first half of July, and the remaining few the next two weeks.

"In some businesses, the giving of vacations in any quantity, at any stated time, is an impossibility. The great mass of routine work in many banks prevents any great number of employees from taking their rest at any one time, and the percentage whose vacations fall in July and August is often very small indeed. On the other hand, Wanamaker's, Altman's and Lord & Taylor's, three of the foremost department stores in New York, have gone far in the other direction. They decided this year to close their stores for the entire day, on Saturdays, in July and August.

"The problem of keeping employees after the vacation time has been dealt with by the Stetson Hat Manufacturing Company. This firm found that frequently a man would work half a year—that is, long enough to earn a vacation with pay. He would go off and take his vacation with pay, and then would not come back to work after it was over. The trouble and waste of time in breaking in new employees during the summer months was very burdensome. But the Stetson Company decided to offer a bonus to those of its men who would remain in their employ for a full calendar year. If a man came in on the first of January or before, stayed through the summer (with vacation, of course) and then stayed on till Christmas, he was given as a mark of appreciation on the part of the firm, a bonus for a Christmas gift. These bonuses have increased progressively from year to year, and the system has been most satisfactory in its results.

"A group of employees in a large flour mill of the Middle West maintain a summer camp at which they all spend their vacation. This thing is done for the employees by the Pierce Undertaking Company of Los Angeles, Cal., who send their men in relays throughout the season to a beautiful spot high up in the mountains.

"In the National Cash Register Company, the length of the vacation an employee gets is contingent on his punctuality through the year. One year's service entitles him to one week's holiday. In addition, if the employee has been late, but not absent, or absent, but not late, he gets three days more. If he has been neither late nor absent, he gets two weeks in all. A great many of the employees earn the two weeks' rest.

"In these ways and many others, the vacation time, instead of being a direct waste to the business, may be made into a constructive force."

FAST WORK BY PRIVATE FIRE FIGHTERS.

BRIEF ACCOUNT OF THE DEVELOPMENT OF THE GEORGE W. BLABON COMPANY'S EFFICIENT FIRE BRIGADE.

For the purpose of demonstrating the efficiency of the private fire fighting force developed by The George W. Blabon Co., of Philadelphia, manufacturers of linoleum, oil cloth and linseed oil, an exhibition fire drill was held on April 30th, 1915, in the presence of several inspectors of the Pennsylvania Department of Labor and Industry. Without warning to the employees, the Company's fire whistle was blown at 11.30 A. M., indicator cards showing the supposed blaze to be on the roof of building No. 10, a four-story structure located near the center of the plant. Within an incredibly short space of time the thirty-eight men comprising the three separate fire brigades were on the scene. The liveliest of the gangs succeeded in ascending to the roof and getting a stream of water on the top of the building from a regulation size fire hose, at 100 lbs. pressure, in one minute and forty seconds. The second brigade accomplished the same result in two minutes and three seconds, and the last gang had their stream going in two minutes and eight seconds. In all three instances the water was on, under full pressure, in ample time to have extinguished any ordinary blaze in its incipiency.

That the fire hazards surrounding the manufacture of oil cloth were fully appreciated by the Blabon Company even back in the days when the first factory buildings were started at Nicetown, is evidenced by the precaution that was then taken to place a small fire pump and a reel of hose in No. 8 building. Already certain fire insurance companies had placed this class of risks on the prohibitive list because of the large quantities of benzine, paints and other hazardous materials required in oil cloth making. Accordingly when the boiler house adjoining No. 4 building was completed another pressure pump was installed in that location. Pails filled with water and sand were also placed in convenient locations in the several buildings, as all persons connected with the plant recognized the necessity of checking an oil cloth fire in its incipiency in order to prevent the structure in which it originated from being quickly reduced to ashes. That being the case, the organization of a volunteer fire department from among the employees was undertaken shortly after operations were commenced at Nicetown in 1875, and from this nucleus has developed

the present skilled fire fighting force now maintained at the works, the efficiency of which is not surpassed even by trained municipal fire fighters.

Following the disastrous blaze that visited the plant in the spring of 1884, plans were immediately made further to improve the works from a fire protection standpoint. Automatic sprinklers were installed in buildings Nos. 7, 8 and 9, and an order placed for a 500-gallon Worthington pump which was erected during September of that year in a small pump house located in the vicinity of the carpenter shop. Water was taken from a pond on the grounds fed from natural sources, and an ample amount of hose was kept on reels located in the pump house. The records show that this equipment rendered effective service at the fire in 1886, especially the sprinklers which held the flames in check and saved the lower floors of these buildings. Hand fire extinguishers were next introduced and about 1888, large perforated pipes which would let down a veritable flood of water by releasing a valve, were placed above the printing and coating racks. This contrivance worked admirably from the start and on many occasions has effectively extinguished incipient blazes.

With the expansion of the plant an extensive system of underground water mains was established and plugs placed at strategic points. To provide additional pressure, a 1000 gallon Blake fire pump was set up beside the smaller one, it being necessary to enlarge the pump house to accommodate the new apparatus, which was installed during April, 1904. In the meantime several small houses, fitted with hose, fire nozzles and axes, were stationed at convenient places from which connections could quickly be made with the fire mains. During the succeeding six years many of the buildings were fitted with sprinkler equipments, and a 50,000 gallon sprinkler tank which towers 140 feet in the air was erected in the early spring of 1910 on a plot of ground between buildings Nos. 29 and 54. The fire main system was likewise extended and so rearranged that water could be forced to the sprinkler heads from either the pressure tank or the fire pumps. Post indicator valves, together with recording gongs, were also added to the fire protection equipment. Pressure was first obtained from this new source on April 7, 1910, and the following year a large concrete cistern, which holds 150,000 gallons of water as an emergency supply, was built. Shortly afterwards modern hand drawn hose wagons and ladder trucks were purchased and the fire fighting force fitted out with rubber hats, coats and boots. Sprinklers were also installed in every building at the plant, which had heretofore not been equipped with this excellent fire fighting device.

In the early days the sounding of an alarm of fire was accompanied by more or less excitement and confusion on the part of the volunteer force, who in their eagerness to render all the assistance possible, frequently did exactly the wrong thing at the wrong time. Happily this condition was successfully overcome by the inauguration of a system of weekly practice drills which have not only familiarized the men with the numerous technical points so essential in fire fighting, but have likewise given them that feeling of confidence and self control so necessary when their own lives and those of their fellow workmen are endangered by fire. By establishing a "Safety Committee" the question of accident prevention is also being handled along modern lines with the result that casualties in the plant have been reduced to a minimum.

SAFETY WORK AT THE WESTINGHOUSE ELECTRIC & MFG. COMPANY, EAST PITTSBURGH.

(C. B. Auel, Director—Standards, Processes, and Materials.)

When the safeguarding of tools, processes, etc., was placed upon a systematic basis several years ago, a mechanical engineer of matured experience was selected to take charge and given the title of Supervisor of Safety Appliances; in addition, the handling of all accident cases was brought under his jurisdiction.

It was assumed and properly so, that there was probably room for improvement in what had been previously done in the matter of safeguarding, not alone because of a gradually accumulated experience over the intervening years, of the best ways of handling safety problems but also because the work had heretofore been handled by a number of departmental heads working more or less independently and therefore, with diverging views.

Accordingly, it was decided to divide the entire equipment of the plant into three arbitrary classes from the standpoint of safety:—

1. Tools, equipment or processes dangerous in the extreme and which should be guarded without further delay.

2. Tools, equipment or processes on which accident, though possible, would not be serious in character.

3. Tools, equipment or processes on which the possibility of accident is so very remote as not to require guarding.

A monthly appropriation was then made by the management and the work of safeguarding systematically commenced, which has since been steadily continued.

Coincidental with the appointment of the Supervisor of Safety Appliances two other rules were formulated:—

4. No tool or equipment of any kind whether new or repaired should be put in service or even erected until properly guarded.

5. In the purchase of new tools, preference should be given, other things being equal, to those safest in their operation and best guarded.

The effectiveness of the plan outlined as far as the actual safeguarding of the equipment is concerned, is conclusively proven by the statement that the average percentage of disabling accidents in the plant for the past two years due to the absence of safeguards has been less than one-fourth of one per cent.

However, the records show that approximately 22% of such accidents are the result of carelessness on the part of employees. To endeavor to reduce this percentage, as well as for one or two other reasons, it is now proposed to change quite radically, the present method of handling safety work. The following is an exceedingly brief outline of the new plan:—

OBJECT.

The object shall be the safeguarding of the employees of the Company against any form of accident whatever while in the Works.

SAFETY COMMITTEE.

A Safety Committee, consisting of a permanent chairman, a permanent secretary and chairmen of various temporary sub-committees, shall be appointed to have charge of this work.

APPOINTMENT OF SUB-COMMITTTEE

Members of sub-committees including chairmen shall be appointed by the permanent chairman to serve until their successors are appointed.

Sub-committees shall be chosen for the investigation of safety conditions with respect to tools, equipment and processes as well as other items of a more general nature involving the safety of employees, such for example as walkways, belts for window-cleaners, blocking of stairs, electrical rules for the plant, etc.

SAFETY INSPECTORS.

Additional to the sub-committees it will be necessary to have safety inspectors who will devote a portion of all of their time to seeing that safeguards or measures once instituted are not done away with, due to removing machines for repairs or because guards do not work perfectly or for other reasons. If this it not done, much of the safety work will be neutralized.

METHODS OF PROCEDURE.

Matters which it shall be deemed desirable to investigate shall be listed in the order of their importance by the permanent chairman, and sub-committees will be organized for such investigations as fast as circumstances warrant.

Sub-committees will meet as often as their respective chairmen deem necessary, the prompt and thorough conduct of business being kept prominently in mind.

Reports as to the finding of each sub-committee shall be made in writing and shall be duly signed by the chairman of such sub-committee, being filed as a regular part of the records of the Safety Committee.

Reports made by sub-committees shall be considered by the Safety Committee and duly accepted or rejected or returned for further investigation by the sub-committee.

Reports on the final action taken by the Safety Committee in connection with each subject investigated, shall be submitted in writing to the Management for final approval who shall take such action as may be necessary to put into effect the recommendations made.

SAFETY AND WELFARE WORK OF THE PENNSYLVANIA SALT MANUFACTURING COMPANY, NATRONA.

E. E. ARMSTRONG, Superintendent.

As early as sixty years ago, the Pennsylvania Salt Manufacturing Company recognized the necessity of Safety and Welfare work for their employees, and the officials at that time employed a physician at the Natrona Plant, to take care of the employees and their families. This service has been rendered to the present date, without one cent of expense to the employees or their families. Medicines, dressings, etc., have been furnished without charge, during all this time. A completely equipped Emergency Hospital is maintained at the entrance to the works, all expense being borne by the Company. According to the rules, the Physician is in attendance at the works for certain hours in the morning, and certain hours in the afternoon. Obstetric services are also rendered without charge.

In regard to sanitation, the Company has looked after the removal of garbage, cleaning of cesspools, and for the greater portion of this time, cleaned the streets, highways, and alleys of the town. Since the incorporation of the township as a township of the first class, the Company has taken only partial charge of this work; looking after its own tenant houses, and the streets on which these are located.

In reference to the housing of the employees; it was necessary in the early days, that suitable houses should be provided for the people, and the Company has now from four hundred to five hundred of these. During these sixty years all the houses have been occupied, and there are to-day from seventy-five to one hundred employees on the waiting list for these homes.

In regard to accident prevention; at all times, this has been given much thought and active effort, and various Superintendents of this plant, have, without thought of cost, introduced and placed in service, many safety devices for accident prevention. Only within the last three or four years, however, since the general activity of the "Safety First" movement has taken place, has this been established on an active basis. The expert, Mr. I. V. Kepner, in charge of fire and accident prevention, also has looked after the safety and welfare work. He oversees this work at the Wyandotte, Michigan plant, and the Greenwich Point, Philadelphia plant; both chemical works of the Company. The Wyandotte plant, by reason of the enactment of the

Workmen's Compensation Law in Michigan, called for many changes, additional safe guards, etc., and the Safety Engineer made a thorough study of the conditions. This experience has enabled the Company to place the Pennsylvania plants on such a footing, that the enactment of the Workmen's Compensation Law in the State of Pennsylvania, finds them ready, and in harmony with its requirements.

The safety organization of the plant is still in its infancy. However, much good has already been accomplished, accidents have been reduced about 35% to 50%, and greater results are expected as soon as the foreign employees are educated to the full meaning of "Safety First." The Company maintains membership in the National Safety Council, and uses their weekly Bulletin Service, as a means of educating the employees. Safety "Rules and Regulations," printed in different languages, for the education of the foreign workers, are being used to a greater extent.

Recently, in cooperation with the United States Bureau of Mines, which sent one of their Mine Rescue Trucks and instructors, the miners received training in mine rescue and first aid work. In order that an injured person might receive first aid at once, "First Aid Cabinets" were distributed about the mines and works. Only miners were allowed to take the mine rescue training,—but over one hundred employees took up the first aid training work, and fifty-four employees of the works and mine passed the Government examination, and now hold United States Governments Certificates. As many others wished to take up this training, a permanent first aid class was formed of about fifty employees of the works, who are now training for Government Certificates.

Old age and disability pensions have been in force in this Company, for sixty years, and at the present time, there are between fifty and sixty pensioners on this list, which includes widows, orphans, and old employees, and also a certain number who have been partly disabled by reason of accident. The Company has a thorough system of Factory Reports, covering fire and accident prevention, and these are followed up promptly, immediately upon receipt of them. For a number of years, the men have been allowed half-time, in case of accident, in addition to the medical services, etc., mentioned before. Safety devices and the manufacturer's thoughtfulness will not prevent accidents without the co-operation of the employees and all steps possible have been taken to this end.

SAFETY ORGANIZATION OF THE GENERAL ELECTRIC COMPANY, ERIE.

M. C. GOODSPEED, Erie Works' Safety Engineer.

The Safety Committee Organization of the General Electric Company and of the Erie Works in particular consists of:

1—A Central Committee representing all the works.

2—A local Committee in each works.

The Central Committee consists of representatives from each of the various works. This Committee meets at frequent intervals and all subjects of general interest or subjects which any member may consider of sufficient importance are studied by it. All decisions, methods or rules adopted by the Committee and approved are applicable in all of the works. As a natural result, the Committee deals, as a rule, with major conditions and in a general, yet specific, way.

One of the most important duties of this body, in actual results has been its study and analysis of various conditions reported perhaps by some one works but found to apply in a more or less large degree to other works.

Each member in the Central Committee is Chairman of the Local Committee in the Works he represents. The latter Committee is made up of both workmen, and foremen, representing the various Departments. The work of this Committee covers all works conditions and in conjunction with the Hospital they also handle the welfare work.

All new equipment is thoroughly guarded when put into service and careful attention is given to see that all guards once installed are kept in operative condition.

In the foundries, considerable attention has been paid to the subject of goggles and shoes. By consistent follow-up work a point has now been reached where goggles are almost always worn by employees needing them. This applies particularly to the men in the cleaning room and to the men engaged in pouring off. In the molding bays in particular, Congress shoes are now worn by practically all of the men. It is only the new men who have not had the matter called to their attention who do not use these shoes.

A well equipped first-aid hospital is maintained with a physician and assistant in attendance throughout the day and with a specially trained assistant available during the night. The Safety Committee co-operates with the hospital in securing the enforcement of a rule that any injury however slight shall go to the hospital for treatment.

By this means we have practically eliminated any difficulty from blood poisoning. The only cases which have arisen have been due to neglect. On account of the general sentiment regarding the necessity of care for slight injuries, the cases which showed a tendency toward blood poisoning have been handled without any serious difficulty and were all the result of minor injuries, such as scratches.

The Committee is firmly impressed with the fact that the matter of safeguarding employees has two phases:

First—The application of guards to operating machinery, such as belts, gears, etc.

Second—The training and education of the employee himself to exercise his own personal judgment in safeguarding himself and his fellow workmen.

At the present time, the second condition represents probably 75% of the total work which should be done, although, of course, the first point cannot be neglected or dangerous conditions would be materially increased.

In order to propagate the safety ideas and safe habits among the men, all available sources are being drawn upon for material and information. This is being placed before the men principally by means of bulletin boards, although it is planned to use the illustrated lecture or picture method in the near future. For certain groups of men, we have used the method of calling them together and afterwards having short talks and general discussion of the subjects pertaining to their work and interests.

As an example of the above, all the electricians in the works have had such a meeting, spending the entire evening in discussion of resuscitation and first-aid work as would apply particularly to electrical dangers and conditions.

For our bulletin boards, we use not only general items of interest appearing in various publications, but are also using pictures and cartoons which have a direct local significance or have been so applied as to make them of striking personal interest to the workmen. For a good many conditions. we believe that the cartoon and picture method is the best means of calling the matter of safety to the attention because the average man will stop, look at, and study a picture, when he would not take the trouble to read a description of the same thing.

THE NECESSITY FOR FIRE DRILLS.

Almost daily accounts of successful fire drills as a means of saving life, appear in the daily press. It was formerly thought that fire drills were simply an amusement proposition or used because the law demanded it. At the present time, however, all thinking people believe in their value and numerous instances have occurred in which their practicability has been proven. Not long ago a disastrous fire destroyed the dormitory of one of the prominent women's colleges. This fire occurred in the middle of the night when all were asleep. No lives were lost, however, owing to the admirable system which had been established for the carrying out of the fire drills. The value of such drills has also been demonstrated very frequently in institutions where large numbers of children are either temporarily or permanently housed. Children have repeatedly been led in safety from burning school buildings without any danger whatsoever. In every institution where an efficient fire drill has been conducted periodically there has never been any extensive loss of life. The value of such drills, however, is due entirely to the exactness with which they are carried out in practice.

Fire drills to be effective at the critical time should be practiced periodically at unexpected times. Too often drills of this nature are carried out after an announcement has been given that they will be held. This announcement tends to destroy any benefit which might be obtained from holding drills at unexpected times. If children or adults know that a drill is being held for practice only, they will probably not consider it a serious matter. Furthermore, when the alarm is sounded at an unexpected time, they realize immediately that an actual fire is in progress and the timid ones are apt to become excited and cause confusion and delay to all the occupants of the building. If, however, drills are held periodically at unexpected times and rigid discipline is enforced, the danger is lost sight of even by those of the most timid nature and they carry out the required practice as a matter of routine. If then a fire should occur unexpectedly and the call for the drill thus becomes necessary, the persons whose safety is involved, are not alarmed unnecessarily but are inclined to believe it is a drill for practice. They may not learn that a fire has occurred until they have reached a place of safety.

The Department of Labor and Industry would accordingly recommend that a fire drill be held periodically and at times unexpected

by those taking part in the drill and that rigid discipline be maintained at all times. If this is done and those taking part in the drill act promptly, there will be no occasion for confusion and disorder to attend any fire which might occur, and the chances are one thousand to one that all occupants of a building will be able to reach the outside in safety. In view of the importance of this subject and to aid in suggesting a method of procedure for those who wish to organize fire drills in their establishments, the following articles on the Fire Rules of three of the most prominent women's colleges, are published. It is hoped that every establishment in our State where the safety of human beings is involved, may speedily adopt a well planned Fire Drill for regular practice.

FIRE DRILLS AT VASSAR COLLEGE, POUGHKEEPSIE, N. Y.

Helen Sloan, 1918.

Vassar is well protected against fire. In every corridor in the dormitories there are hose, chemical fire extinguishers, and buckets that are kept standing full of water. In case of fire, the glass in the alarm boxes has only to be broken, and the bell rings in the hall concerned and in every place where there are men and apparatus.

Then after the head fire captain has been warned, the building is emptied just as in a drill. All the halls, except one, have fireproof stairways and fire escapes; and this one, Main, being the oldest building on the campus, is provided only with wooden steps and has no fire escapes. However, there is a supply of ropes which can be let down from the windows, and there are two fire walls, so that the hall can be put into three separate parts, to prevent the spread of fire.

Of course, watchmen are on duty at night, to see that students are not taken unawares.

Then there are precautions which the girls themselves take. Every one must have a tray under her chafing dish, and each one is requested to use solidified alcohol instead of the liquid.

But since no matter how careful people may be, fires do seem to start somehow, and since most of the danger at such times is due to disorder and panic, drills are an absolute necessity. At college they become as much a matter of routine, and their regulations are so fixed and definite, that in a case of real fire the girls would do the same thing from habit; and, in fact, few of them would suspect it was not merely practice. Panic would be next to impossible.

In the first place, the drills are conducted by fire captains, who receive office in the following manner: At the end of every year, the whole student body elects a chief head captain from the class becoming seniors the following fall. This girl then appoints a head captain in each dormitory, and these in turn appoint sub-captains, so that each of these last will have about eleven girls under her jurisdiction. Each captain has a substitute who will conduct the drill in case she herself is absent from college. To this substitute she gives the list of the girls in that particular group, with explicit instructions. The head captain, if she is to be away, indicates on

her fire sign, which hangs outside her door, the name and room number of the substitute. Notice is also posted on the bulletin board, stating the name of the acting head captain.

Now, as to the drills themselves, no one except the head fire captain knows when they are to take place, although the men on duty are notified when it is merely practice. Then, to give the signal for the drill in a particular dormitory, the head fire captain there unlocks the alarm box, to which she alone has the key, and allows the bell to ring for some time.

Every girl must be present at drills, or else she must have registered in the fire book, so that the captains will know that she is away. At the main entrance of each dormitory there is a book where all who are to be absent for the night must sign their names, room numbers and the date. If they are spending the night in some other hall, they must register in that fire book, with the numbers of the rooms where they are visiting. In any case, all must be accounted for.

For the drills there are rules which are followed to the letter every time. After blowing her whistle through all the corridors, the head fire captain takes the registration book and goes outside to her regular station. All the girls quickly put on heavy coats and shoes, close their windows, turn out their lights, leave their doors open, pass out of the building by the most direct route, and stand at the meeting place assigned to their group by its own particular captain. Some people do not understand why the lights should be turned out; but it is easily explained by the fact that at night the dynamos are changed and the power lowered, so that if all the lights were suddenly switched on, the fuses would burn out, and we should be in total darkness. Now, if it should happen that any exits were cut off and indirect means of escape were used, the girls would go to their posts as soon as possible and stand there. It should be noted that guests in halls where they do not live regularly follow the rules governing those whom they are visiting.

The building must be emptied quickly and quietly. There is no running, talking or unnecessary noise. At the outside doors on the ground floor girls acting as policemen are stationed to maintain order, and they give "call downs" in cases of disturbance.

Meanwhile the sub-captains take the lists of the girls on their respective corridors, which lists are printed on cards hanging next to the door of their rooms. Before quitting the building, they must knock on all the doors and say "drill"; never "fire." They continue to knock until answered, or until they see that there is no one inside. Moreover, it is their duty to enter every room and bath and see that all windows are closed, so that there will be no air cur-

rent to fan the fire. All this done, when the captains have hastened to their group meeting places, by the aid of electric flash lights they call the roll from their lists. Immediately then they report the absent ones to the head fire captain, who stands at her accustomed post. If these names are not down in the registration book, the sub-captains are sent back for the students or faculty members missing. When the roll call is completed and every one accounted for, the head captain blows her whistle the number of times specified for her respective hall. This signifies that the drill is ended, and it is only then that the students are permitted to re-enter the building.

Girls are fined twenty-five cents for failure either to be present at drill or to register. For three such offenses, their privileges are taken away.

It is evident, then, that the success of this fire plan depends upon order and close adherence to rules, and every girl must do the part assigned her.

FIRE RULES OF BRYN MAWR COLLEGE, BRYN MAWR.

(Contributed by Isolde Zeckwer, Head Fire Captain.)

A. RULES FOR DRILLS.

I. The purpose of the hall fire drill shall be to get all students safely out of the building in an orderly manner. The actual fighting of the fire shall be done by the trained Fire Fighting Brigade, composed of college men, the Head Fire Captain, the six Hall Captains, and six Hall Lieutenants (one from each hall), all under the leadership of the Superintendent of Buildings and Grounds.

II. The alarm shall be the same for a drill as for a real fire—one long ring and then one or two short rings to indicate the place of assembly (one ring for front door, two for back door) followed by a continuous ring, then the short rings repeated, and then a continuous ring.

III. The Hall Captain shall see that the proper number of short rings are sounded, depending upon the location of the fire.

IV. The hall shall be divided into squads (as many as shall be agreed upon by the Hall Captain together with the Head Fire Captain) composed of a definite number of students living near each other.

V. An Aide shall be in charge of each squad, who, as soon as the alarm is rung, shall close open windows in the rooms of the students of her squad, and see that all students have left these rooms.

VI. Each student when the alarm is rung shall shut the windows of the room in which she is at the time and provide herself with a wet towel and heavy clothing. Students who are not officers shall then walk quickly and without any noise to the place of assembly. Each squad shall form a separate group at the place of assembly, and each person as she arrives shall place herself in the proper place in her squad.

VII. The first lieutenant to arrive at the assembly place, i. e., Lieutenant I, shall get the roll book and take command.

VIII. The other lieutenants on arriving shall report to Lieutenant I. Lieutenant II shall be sent by Lieutenant I to the phone, Lieutenant III to the Captain at the fire to take messages, Lieutenant IV and Lieutenant V to their places in their own squads. Lieutenant II when she has finished phoning shall take her place in her own squad.

IX. The Captain shall send messengers to summon assistance and shall notify Lieutenant I through Lieutenant III of the names of those persons she has sent as messengers. Lieutenant I shall mark in the roll book the names of these students and the names of the lieutenants who have reported to her, as being on duty.

X. When the aide of each squad has finished the draughts and warnings in the rooms of her squad she shall go to her assembled squad, maintaining their order, and find out who are missing, giving the names of those absent to Lieutenant I who shall mark their names in the roll book as unaccounted for. The aide shall then marshal her squad out of the building. The aides, after squads have left the building, shall remain with Lieutenant I, ready to be sent by Lieutenant I to find any students whose absence she cannot account for.

XI. Each aide shall have a first sub-aide under her, who shall take her place when absent. A second sub-aide shall take charge if the aide and first sub-aide are both absent. In a fire the aide may call upon her sub-aides to help her do draughts and warnings.

XII. No student shall enter the building after the alarm has been rung, except officers.

XIII. Fines of $.25 shall be imposed by the Captain upon all students who do not close the windows of the rooms in which they are, who do not respond quickly to the alarm, who are not properly prepared, or who cause any noise or disorder. A fine of $5.00 shall be imposed upon anyone ringing the alarm except in case of fire, or not especially instructed to ring it for a drill.

XIV. There shall be a series of competitive drills between the Halls, the Hall judged to have the best drills receiving a trophy, purchased with the fines of all the Halls.

B. RULES FOR FIRE.

I. The alarm must be rung immediately in a continuous ring by the first person noticing the fire. No discretion may be exercised. The person ringing shall notify the Captain of the location of the fire, whereupon the Captain signals by short rings the place of assembly.

II. No student shall attempt to fight the fire, or save any of her belongings, but must go immediately to the place of assembly, except in case a fire has just begun, when the Captain may order certain students to help her put it out before the Fire Fighting Brigade arrives.

C. DUTIES OF HALL CAPTAINS.

I. To hold a meeting and explain the fire rules to all students in her hall. To impose a fine of $.25 on any student for unexcused absence from this meeting. To explain the rules to the students absent from this meeting.

II. To appoint five lieutenants.

III. To divide the hall into squads with the approval of the Head Captain and appoint an aide for each.

IV. To hold meetings of her lieutenants, aides and sub-aides, instructing them in their duties, and discussing the drills with them.

V. To fine all students whom she or her officers see breaking the rules.

VI. To tell sick students in advance that a drill will take place and excuse them from attending.

VII. To notify her lieutenants in advance of a drill so that assistance will not be summoned.

VIII. To keep a roll book at each door of the building.

IX. To go over the whole hall at the beginning of the college year with the Warden and her officers in order to be familiar with all parts of the hall.

X. To hand in weekly reports to the Head Fire Captain every Monday before 9 o'clock. Whenever drills are not held at the appointed time, a report of the omission shall be made in writing to the Head Fire Captain with the reasons for the omission on the card.

XI. To assume command in the absence of the Head Fire Captain whenever present at a fire in Taylor, Dalton, Gymnasium, or any other college building which has not an organized brigade, the first Hall Captain arriving performing the duties of Head Fire Captain and all other Hall Captains or Lieutenants, as they arrive, performing the duties of lieutenants.

XII. To see that the alarm is tested at one o'clock every day.

XIII. To inspect the apparatus and see that it is kept in good condition.

XIV. To allow no gasoline, ether, or any other explosive to be used in the halls. To allow safety matches to be used only in the tea pantries and no papers burned in fireplaces.

XV. To see that a list of telephone numbers hangs by the phone.

XVI. To attend drills of the Fire Fighting Brigade.

XVII. See Articles III, IV, VIII, IX, XIII under *Rules for Drills* for duties in drills. See I and II under *Rules for Fire.*

D. DUTIES OF LIEUTENANTS.

I. To assist the Hall Captains and take their places when absent.

II. See Articles VII, VIII, IX, X, XII under *Rules for Drills* for duties of lieutenants when the Captain is present.

III. When the Captain is absent, Lieutenant I shall take the place of the Captain, Lieutenant II shall perform the duties of Lieutenant I, and Lieutenant III of Lieutenant II.

IV. To report the names of all students violating the rules of the Hall Captain.

V. To attend meetings held by the Hall Captain.

VI. To act as Lieutenant in fires in Taylor, Dalton, Gymnasium, etc.

E. DUTIES OF AIDES.

I. See Articles V, X, XI, XII under *Rules for Drills.*

II. To appoint first and second Sub-Aides and instruct them in their duties.

III. To report to the Hall Captains the names of any students violating the rules.

IV. To find out each night, who of her squad are absent for the night.

V. To attend meetings held by the Hall Captain.

VI. To arrange the members of her squad in a definite order, and see that each person is in her especial place at drills, so that she can tell at a glance who are absent.

FIRE RULES OF RADCLIFFE COLLEGE, CAMBRIDGE, MASS.

(From The Radcliffe News, October 16, 1914.)

RULES FOR ALL STUDENTS.

1. In case of fire, when once out of a building, DO NOT GO BACK IN.

2. Intermittent alarm means ESCAPES; continuous alarm means REGULAR EXITS.

3. If you are *sure* you see a *fire,* ring the gong; if there is any question, FIND OUT.

4. KNOW THE PROPER EXITS for each course you attend and for Agassiz House and the first floor of Fay House. This is important. Any member of the brigade may ask you at any time or place to explain any one of the exits for which you are responsible.

WHEN THE GONG RINGS.

1. KEEP SILENCE.

2. Fold up the seat and arm of your chair, or push your chair under your table.

3. Pick up ALL your belongings that are in the aisles.

4. March out *promptly* in single file, row by row. The row nearest the door is to go first.

5. The first two girls to reach a door must see that it is kept open. A lieutenant will probably relieve these two girls before the drill is really under way.

6. DO NOT GET RATTLED. Obey the member of the brigade or the Monitor who directs you.

7. If the alarm is intermittent, signifying use of the escapes, go in single file, just as from door exits.

SPECIAL RULES FOR COLLEGE LIEUTENANTS.

1. Be ready, at every drill, to assist the chief.

2. Be ready to take reports from monitors at drills.

3. Hold doors at drills and take positions at stairways, etc., to supervise and direct.

4. *Enforce silence.*

5. Inspect that part of the college fire apparatus and escapes assigned to you, and hand in a written report each Monday to the chief.

6. Be ready to receive reports from monitors. *If any girls are not accounted for, report* AT ONCE *to the chief.*

SPECIAL RULES FOR MONITORS.

1. Assign two window-closers in each course.

2. Know accurately how many girls there are in each course under your supervision, and the proper exits for each of these courses.

3. Leave two or three of your attendance slips with some other *regular* attendant of the course who is to be your substitute and conduct the drill, in case of your necessary absence. If the course has forty or more members, have also a second substitute, for duty in case of the absence of the first substitute.

4. When the gong rings, do your best to clear the aisles.

5. Stand by the door and supervise the marching out. Close the door. Count the girls and check up your list *immediately* on getting them out of doors.

6. Have the girls march out in single file, row by row, the row nearest the door first.

7. Have your course fall in directly behind the one that is passing, or, if none is passing, start promptly to the proper exit.

8. In case the drill occurs without a member of the brigade, the first monitor out of the building is head monitor, and must make herself known as such to the other monitors and assume the duties of a lieutenant.

9. Follow your course and report to a member of the brigade, or, if there is no regular member of the brigade present, to the head monitor.

SPECIAL FIRE RULES FOR THE HALLS OF RADCLIFFE COLLEGE.

(Contributel by Catherine E. Jackson, 1915.)

GENERAL.

1. Know your exits.
2. Have a heavy coat, skirt and towel on a given hook, *always*.
3. When the gong rings, take your coat, skirt and your towel, shut your window and your transom, turn on your lights, stand outside your closed door until the floor lieutenant gives the signal.
4. The girl in the room nearest the hall window must close it.
5. When the signal is given, file out doors quickly and quietly in pairs. Remain together near the terrace until the hall captain gives further orders.
6. Obey any orders from the floor-lieutenant or hall-captain as to valuables, wetting towels, etc.
7. The rope escapes *must* be placed on the hooks provided.

RULES FOR HALL-CAPTAINS.

1. Inspect extinguishers and escapes once a week, and each rope escape at least twice unexpectedly each week, and hand in a written report each Monday to the chief.
2. Organize drills as directed and hold drills irregularly at least once in three weeks, except during examination periods and in mid-winter. Notify the chief when drills are to be held.
3. Choose, with the chief's approval, a floor lieutenant for each floor, and two for floors on which there are more than ten girls. Any duties except the directing of the drills may be delegated to floor lieutenants. Also appoint one person on each floor to inspect bath rooms at the time of drills.
4. Keep a list of the girls in your hall.
5. Be ready to assist at college drills if present.

DRILLS.

1. Have a certain girl ring the gong.
2. Go to the main exit with your list of girls.
3. Call the roll and receive the reports of floor-lieutenants.

RULES FOR FLOOR-LIEUTENANTS.

1. Be in the corridor at your stairway immediately after the gong is rung.

2. As soon as the girls are outside their doors, march them down and out, in order. In case all the girls do not appear, put a substitute in charge of the line and explore the rooms not vacated.

3. Obey any orders from the hall captain.

SPECIAL RULES FOR BERTRAM HALL.

1. The first girl to enter a room which leads to a fire escape must see:

(a) That there are no obstructions.

(b) That the guard is moved away from the window.

(c) That the window is wide open, the screen up, and shutters open.

2. Each girl as she reaches the ground must wait and help the next girl until that one reaches the ground.

DANGERS FROM INFLAMMABLE LIQUIDS.

Inspections made throughout the State by inspectors of the Department of Labor and Industry reveal the fact that persons who use benzine, gasoline or other easily inflammable liquids do not exercise the amount of care necessary in handling this material. The vapor from material of this nature is readily inflammable, and, under certain conditions, highly explosive. An open flame, a spark or any object heated to incandescence will immediately ignite vapor of this kind. This fact, however, seems to be lost sight of by many people who constantly handle inflammable liquids.

On numerous occasions when inspectors have visited garages, cleaning establishments or factories where these liquids are used for cleaning or other purposes, they have found open cans of these materials placed in very prominent positions, on work benches, under work benches, in corners, and. in fact, anywhere it was convenient to place these receptacles. In the majority of cases a close examination in the vicinity of the cans will reveal the presence of burnt match sticks, cigarette or cigar butts, or other evidences that an open flame or fire of some kind has been in dangerous proximity to these receptacles. That this material has not become ignited seems to have been due only to an especial act of Providence, and not to any care or attention on the part of the user.

It has often been noted that fires in garages have, in many instances, occurred a short time after persons have quit work, either for the day, or when they left temporarily for meals. It is common belief that, in some of these cases, fires may have been started by a match stick with which they had lighted their cigar, cigarette or pipe, and which they then had carelessly and hurriedly thrown away, thinking it had been completely extinguished.

All establishments that use dangerous and highly inflammable material of this kind should keep their supply in safety cans, which would not permit their inflammable and explosive vapors to be given off. They should also allow no appreciable amount of liquids of this kind to be kept on the premises. If it is necessary to purchase a large quantity, it should be stored in an underground tank located outside of the building, and only as much as is necessary for the daily operation should be drawn off into safety cans. All of this material should be removed at night from the building, and again placed in the storage tank or in some outside storage place.

Within the last two months, five men have been killed in this State as a result of explosions caused by the ignition of benzine vapor; so that the danger is one which should be guarded against at all times.

The Department of Labor and Industry has been endeavoring to safeguard employers and employees from this danger by suggesting the use of safety cans wherever material of this kind is used. The Department accordingly suggests that employees and employers give careful attention to this matter, and urges them not to wait until they have had a dangerous fire or explosion before providing these safe containers. It also recommends that only small quantities of gasoline or benzine, sufficient for immediate use, be taken into buildings where employees are at work, and that the main supply be kept in underground storage reservoirs located outside the buildings.

CARELESSNESS—THE CAUSE OF MOST ACCIDENTS.

Investigations of industrial accidents recently undertaken by the Pennsylvania Department of Labor and Industry show that by far the greater number of these accidents are the result of the carelessness of some one person. A great majority of people believe that if machinery is safeguarded it will not be necessary for any further attention to be paid in preventing accidents. It is a well-admitted fact, however, that safeguarding alone will not prevent the great proportion of accidents. Some authorities claim that it is possible to prevent only one-fourth of the accidents by safeguarding, and that the greater number of preventable accidents can be eliminated only by the education of workmen up to the point that they will be careful of their methods and of their actions.

Numerous instances have been brought to the attention of the inspectors of the Department where employees have deliberately disregarded direct orders given by the officials in charge of the plants. In fact, most persons who are in charge of accident prevention work claim that if employees would be more careful, and would give particular attention to all danger points, one-half of the accidents which do occur, would be eliminated.

As a result of this belief that safeguards alone cannot prevent accidents, all safety campaigns not only involve the safeguarding of machinery, but the employees are carefully taught safe and sane methods, and are also urged to practice these teachings, and to encourage their fellow employees to be equally careful. Bulletin boards are usually located in various places in the plants, and upon these posters and other information which would call the attention of the employees to dangerous practices are displayed. From time to time the employees are called together in social meetings, and are given lectures by various persons, either by men brought from a distance, who are recognized authorities in their particular fields, or by local representatives of the safety movement. Motion pictures and lantern slides are also found to be valuable in this line of training. Some companies have also made up safety buttons, which, while they are not of intrinsic value, are well worth having. These buttons are given only as a reward for some suggestion or deed or notable achievement in accident prevention in that particular plant.

The main thought underlying this teaching, however, is to inculcate in the minds of all, the necessity of being careful. It is manifestly impossible to secure reduction of accidents in any plant unless this idea of carefulness is instilled into the mind of each employee. One careless man in a plant not only endangers his own life, but also the lives of his fellow employees. It matters not what the nature of the industry may be, since in most cases his actions will be associated with those of his fellow workers. Numerous instances have come to the attention of the inspectors of the Department where a careless employee has not only brought injury to himself, but has also been the cause of inflicting injury on several other men who were working in the vicinity. In some cases a careless man in hoisting material has not used a safe hitch, but in order to save time has lifted very heavy material by means of an improper hitch. In one instance, when such material was being carried through the shop, the load slipped, and in falling, injured several persons. In other cases men chipping and filing, have not been mindful of workmen in their vicinity, and have caused slight or serious injuries to these men because of flying chips. Another careless workman may have left uncovered or unprotected a dangerous place, and his fellow employees, unmindful of his carelessness, have stepped into this place and suffered injury. Tools and various articles are often thrown carelessly on the floor, and workmen coming along in a hurry have unfortunately tripped over these, and been hurt. Many instances might be cited where the carelessness of one employee has caused injury and some times death to others.

The Department of Labor and Industry accordingly urges that each workman constitute himself a safety committee of one to see that safe practices are carried on in his particular plant, and also to see that not only he, himself, but also those men who are working nearest to him, do things in a safe manner. If this were universally done, it would be only a short time until the preventable accidents would be eliminated, and the great loss which is now occasioned by industrial accidents would be reduced to a minimum.

THE NECESSITY OF SAFEGUARDS.

During the last few years, great progress has been noted in the safeguarding of machinery and of dangerous places. If any one will take the trouble to glance at the magazines carrying advertisements of machinery at the present time, he will find that almost without exception illustrations of new machinery show all dangerous parts substantially guarded. Protruding set-screws have been removed and replaced with safety set-screws, and in fact any portion of the machinery which might be liable to cause injury to a workman, has been eliminated or safely enclosed. An examination of publications issued five or more years ago, showing illustrations of machinery, discloses an entirely different attitude on the part of manufacturers. These illustrations picture dangerous revolving parts unguarded and many unguarded gears. The change of attitude on the part of manufacturers, namely, a desire to safeguard their machinery in every way, has been due almost entirely to the attitude of the purchasing public. To-day the persons who purchase machinery take into consideration safety qualifications, and, all other factors being equal, that machine will be purchased which shows the greatest care on the part of the manufacturer to render it safe for the workmen.

In some remote cases, as the inspectors of the Department of Labor and Industry visit various establishments throughout the State, they find persons who ridicule the idea of making everything as safe as present knowledge permits. Fortunately, this class of persons is limited. The majority of people are not satisfied with methods which prevailed years ago, but appreciate the fact that the world has advanced, and methods and practices have advanced along with other things.

In some cases, after an inspection of a manufacturing establishment, the inspector will call the attention of the management to the fact that various dangerous places should be guarded, or that this or that protruding set-screw should be removed. In practically every case these suggestions are received in good grace, and the inspector is assured that the management has every desire to safeguard its employees. In some exceptions, however, the owner may make a remark to this effect: "Why, this machinery has been in operation here for many years. All our employees frequent this vicinity, and we have never had an accident from this particular point in all that

time. If that was a dangerous condition, we should have had many accidents by this time; and it is utterly out of reason to make me place a safeguard at that point."

Such an attitude is difficult to change, and it is only by persistent reasoning and the citing of examples of similar conditions which have caused accidents, that the owner comes to see the wisdom of the inspector's suggestion.

One of the best examples of an illustration along this line happened some time ago in the experience of one of the inspectors of this Department. This inspector had occasion to go into an old flour mill, which was run by water power. On account of the fact that the owner was the only person employed in this building, the Department had no official jurisdiction. The inspector, however, knew the owner personally, and in the course of an unofficial inspection noticed a shaft to which was attached a projecting set-screw. He called the owner's attention to the fact that, owing to the prominent position of this set-screw, it was a hazard to his safety, and suggested that it would be the best policy for him to remove it. The owner looked at the inspector for a few minutes, and in a careless and laughing manner said: "Ho, that set-screw has been in that place for the last sixty or seventy years, ever since the mill was built. I have worked here for many years, and have never had it catch in my clothing, or, in fact, felt that there was any danger connected with it." The inspector tried to reason with the man for his own welfare, but he paid no attention to him. As the place did not come under the jurisdiction of the Department, the inspector was unable to issue any instructions requiring the removal of the set-screw.

About two months afterwards, while the inspector was visiting a town some distance away, he picked up a newspaper, and noticed that the owner of the flour mill had been killed the day before by being caught in the shafting. A few days later the inspector had occasion to visit this same town again, and out of curiosity called at the mill to see how this man had been killed. It developed that the set-screw, concerning which he had spoken to the owner about two months before, and which he had requested to be removed, was the sole cause of the man's death. As the latter was working near this shaft with his back to it, he thoughtlessly backed into it. The set-screw caught in his clothing, and as a result he was wrapped around the shaft. He finally died from the injuries he received.

This instance is one of the best illustrations of what may result from heedlessness to advice regarding the safeguarding of machinery and dangerous places. A few minutes' time and possibly an outlay of less than twenty-five cents would have rendered that particular point safe, and the owner might have been living today.

The Department of Labor and Industry would accordingly advise that as soon as any condition is found which is unsafe, that immediate measures be taken to remedy the defect. Delay may mean serious injury to someone, and possible death. Let every one act at the proper time, and prevent a repetition of an accident such as has been described above—one due entirely to carelessness.

DANGER FROM LIGHTING FIXTURES.

In many cases an inspection of lighting fixtures often reveals the fact that very little attention has been paid concerning their location in unsafe places. Frequently gas or electric light fixtures are placed in such a position that persons deriving illumination from these fixtures are accustomed to sit directly under them. Especially is thus true where lighting fixtures of the indirect type are used. The globes of these lights are usually of very heavy material, and are kept in position by bolts running through the glass or being bound around the edges. Persons who frequent the rooms in which heavy globes are placed seldom give attention to the fact that there is a possibility of the globe or shade cracking and falling down upon them. In barber shops the electric light or lighting fixtures are frequently hung directly over the patron's head. If the globe should crack or the shade become loose, a serious accident to the person sitting in the chair directly underneath could scarcely be avoided. An example of this happened a few years ago. A shop of this character had been completely renovated, and among the improvements which were installed were large acetylene gas burners with heavy porcelain shades. Gas of this kind produces an extremely hot flame, and, owing to the fact that the shades were not the proper kind, but were intended for use as electric light fixtures, they became cracked through the intense heat. A large piece fell down on one of the patrons of the shop, and, fortunately, instead of striking him in the head, hit him on the arm. The injury was only slight, but it showed the necessity of safeguarding people from the danger of the more serious accidents, which might result if glass would fall on the head.

Gas and electric fixtures are frequently found in homes, so situated that those using the light from them are forced to seat themselves directly underneath. In some instances fixtures so located have contained cracked or broken shades. Such a condition is unquestionably one which may cause considerable injury to those unconscious of the danger.

It is only within the last few years that this source of danger has been receiving some attention, and the necessity for it became apparent as soon as the large type of shade reflectors came into use. This new type of shades is usually made of extremely heavy glass, and naturally becomes a very great source of danger if it is cracked.

The Department of Labor and Industry is glad to call attention to the work of accident prevention along this line which has been accomplished by various manufacturers. The work of the Westinghouse Electric Company, of East Pittsburgh, is especially interesting. This company has recently inaugurated a practice of placing a wire netting around all heavy shades on lighting fixtures. If the shade should break from any cause, the particles of glass are prevented by the wire netting from falling on a person who might happen to be underneath. The company has shown at some of its various safety exhibitions, pictures of the particles of glass from broken shades being held in position and prevented from falling by the use of wire netting.

Attention is, therefore, directed to this hazard which may exist in factories, homes, hotels, apartment houses, department stores and various other shops. The Department would urge that all proprietors of such places make provision so that persons who frequent them, will be prevented from being injured by falling particles of glass from fixtures which have been placed directly overhead where persons are assembled.

Vol. 2 No. 4

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

MAY, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

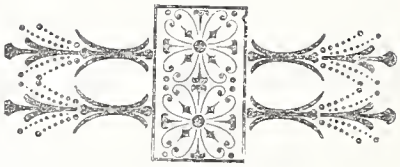
The Chief of the Bureau of Statistics and Information (position vacant) is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.



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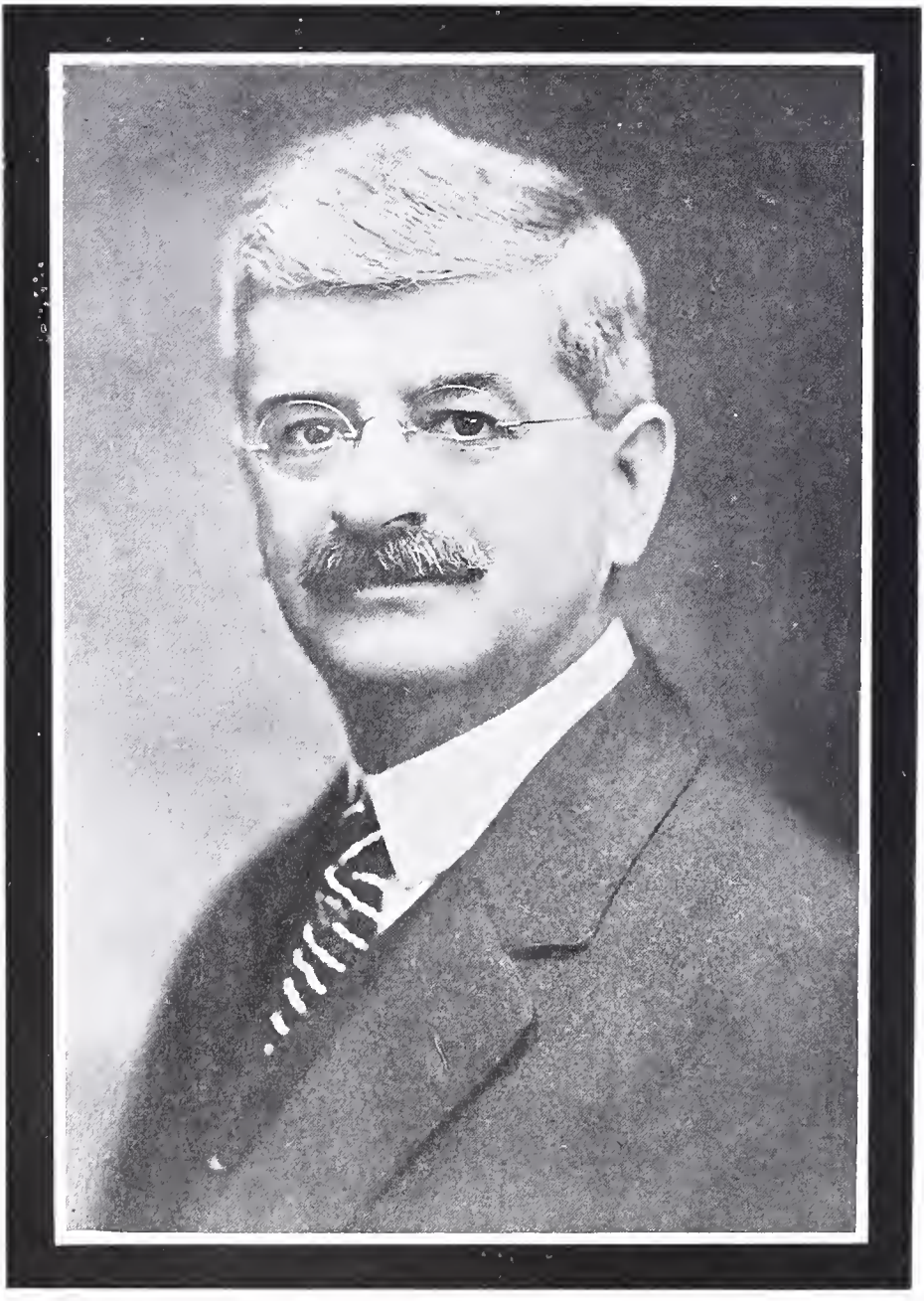


ALFRED R. HOUCK.

ALFRED R. HOUCK.

It is with great sorrow and regret that the Department of Labor and Industry announces the death, on May 22nd, 1915, of Alfred R. Houck, Chief of the Bureau of Statistics and Information. Mr. Houck had been connected with the Department as Chief of this Bureau since its organization and had successfully placed this part of the work upon an efficient basis. He handled with the utmost vigor and enthusiasm the task of organizing the great amount of material essential to the perfection of statistical work. The State of Pennsylvania, and especially this Department, has lost an efficient and loyal officer. He was not only a loyal officer, however, but also a faithful friend, and displayed at all times a genial and kindly nature which endeared him to those who were privileged to know him. By friends and fellow workers, his absence from his accustomed place will be deeply felt; but the spirit with which he worked remains to inspire the best efforts of those who are left to take up the tasks he has resigned.

(From Harrisburg Telegraph, May 22nd, 1915).

"Alfred R. Houck, chief statistician in the Department of Labor and Industry and son of Henry Houck, Secretary of Internal Affairs, died at his home in Lebanon early to-day. He was 47 years old. The funeral will be held Monday afternoon at 2:30 o'clock, with services at his home. Burial will be private.

"Mr. Houck was for many years Republican leader in Lebanon, city and county. He was postmaster of Lebanon sixteen years, retiring from that position about a year ago following the inauguration of President Wilson.

"Mr. Houck was born in Lebanon and resided there all his life. For twenty years he was prominent in Republican politics and was undisputed leader of the Republican party in his county for many years. He was educated in the public schools of Lebanon and afterward attended the Annville Normal School. In 1884 he entered the Weimer machine works, where he spent three years as apprentice, and then went into the draughting and engineering department, where he became proficient as a mechanical engineer. In 1887 he went to Scranton for the Lackawanna Iron and Steel Company as a mechanical and electrical engineer, but resigned in 1898 to accept a

position in the internal revenue service under the direction of Collector Hershey at Lancaster. Two years later he was appointed postmaster at Lebanon, which office he held with distinction until about a year ago, when President Wilson named a Democrat to succeed him.

"His talent for organization and system drew the attention of those who were then organizing the State Department of Labor and Industry and he was appointed chief of the bureau of statistics which position he held until his death. Mr. Houck made the Lebanon post office one of the most efficient in the country and he carried his ability and energy into the service of the State. His system of recording in the State Department is the wonder and admiration of all who have seen it. It is one of the best in the country and it was in its development that Mr. Houck overworked almost to the point of breakdown.

" 'We call Houck the "ginger box" of the Department,' said Commissioner Jackson to a friend not long ago, 'because when we want anything done efficiently and promptly he is the man upon whom we call.' Mr. Jackson had repeatedly urged Mr. Houck to take a month's vacation, but he would not hear to it, and last Monday he was seized with acute indigestion while at the railroad station in Lebanon awaiting a train to Harrisburg. Complications followed and his death occurred about 2 o'clock this morning.

"Mr. Houck was one of the first men in the State to suggest Dr. Martin G. Brumbaugh for Governor and was one of his strongest supporters both before and since election.

"He is survived by his wife and four daughters, Eleanor J., Margaret V., Josephine and Emily S.

"A brother, Paul, of Schuylkill county, and his father were at his bedside when death came. Expressions of regret were heard on all sides to-day. Mr. Houck was not only well known and respected in political circles throughout Pennsylvania, but he was popular with thousands of persons with whom he had come into contact in his years of experience as a leader."

ACCIDENTS REPORTED TO THE DEPARTMENT DURING MARCH, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.		
Nursery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Building trades,	4	7	2	12	12	6	4	2	1	44	.....	.....	.....	47	.....
Chemicals,	.....	9	13	15	8	9	8	.....	2	60	.....	.....	.....	62	.....
Clay—glass,	9	12	14	16	15	15	13	1	5	88	.....	.....	.....	94	.....
Clothing,	.....	1	.....	1	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....
Food,	.....	2	9	4	4	4	4	1	2	23	.....	.....	1	27	.....
Leather,	1	6	7	2	6	3	3	.....	6	22	.....	.....	.....	28	.....
Liquors,	2	1	2	.....	2	1	1	.....	.....	9	.....	.....	.....	9	.....
Lumber,	.....	6	7	3	6	4	4	1	2	27	.....	.....	.....	30	.....
Paper,	2	4	2	6	2	6	3	1	.....	21	.....	.....	3	25	.....
Printing,	.....	1	1	.....	2	.....	1	.....	.....	4	.....	.....	1	5	.....
Textiles,	.....	5	6	8	5	7	6	.....	.....	36	.....	.....	1	37	.....
Miscellaneous,	2	9	10	6	10	6	5	1	2	42	.....	.....	2	47	.....
Laundries,	.....	.....	1	.....	.....	1	.....	.....	.....	2	.....	.....	.....	2	.....
Metals,	47	276	312	309	257	252	176	11	132	1,485	.....	.....	2	1,630	.....
Mines,	9	166	150	137	123	132	100	53	61	703	.....	.....	.....	817	.....
Public service,	56	224	230	222	256	208	153	2	121	1,226	.....	.....	.....	1,349	.....
Tobacco,	.....	.....	1	1	.....	.....	.....	.....	1	1	.....	.....	.....	2	.....
Unclassified,	.....	1	5	.....	5	1	.....	1	2	9	.....	.....	.....	12	.....
Total,	132	730	772	742	713	655	481	74	337	3,804	.....	.....	10	4,225	4,225

ACCIDENTS REPORTED TO THE DEPARTMENT DURING APRIL, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.		
Nursery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Building trades,	2	7	14	4	7	2	5	2	1	38	.....	.....	.....	41	.....
Chemicals,	3	9	5	10	5	14	10	1	4	50	.....	.....	1	56	.....
Clay—glass,	2	12	12	15	11	15	9	3	2	71	.....	.....	.....	76	.....
Clothing,	.....	1	1	1	1	2	.....	.....	.....	6	.....	.....	.....	6	.....
Food,	.....	2	1	3	3	4	5	.....	.....	18	.....	.....	.....	18	.....
Leather,	.....	5	3	5	5	3	2	.....	2	21	.....	.....	.....	23	.....
Liquors,	.....	3	1	1	.....	.....	1	.....	.....	6	.....	.....	.....	6	.....
Lumber,	1	8	2	7	5	5	3	1	4	26	.....	.....	.....	31	.....
Paper,	1	4	4	7	4	5	4	.....	.....	28	.....	.....	1	29	.....
Printing,	.....	.....	2	2	.....	2	1	.....	.....	7	.....	.....	.....	7	.....
Textiles,	1	7	5	6	5	5	1	.....	.....	27	.....	.....	3	30	.....
Miscellaneous,	2	6	4	4	4	3	2	.....	.....	25	.....	.....	.....	25	.....
Laundries,	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	1	.....
Metals,	37	269	241	268	227	197	147	13	82	1,291	.....	.....	.....	1,386	.....
Mines,	18	187	207	180	145	164	121	60	77	885	.....	.....	.....	1,022	.....
Public service,	54	211	225	229	203	165	120	3	71	1,132	.....	1	.....	1,207	.....
Tobacco,	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....	.....	.....	2	.....
Unclassified,	1	2	4	2	2	2	1	3	.....	11	.....	.....	.....	14	.....
Total,	122	733	731	744	628	590	432	86	243	3,645	.....	1	5	3,980	3,980

FIRST AID TREATMENT OF INJURED PERSONS*

Humanitarian as well as economic considerations demand of each employer, and for that matter, of every one in his employ, persistent effort for the prevention of accidents and of injuries to persons. To accomplish this purpose is the finest work that can be done in the field of safety and sanitation. It is clear, nevertheless, that absolute immunity from all accidental injuries cannot be expected; it is therefore of next importance to eliminate or promptly check the harmful results of such injuries as do occur, in order that injured persons may not be kept unnecessarily from their daily work nor suffer any permanent physical impairment or disfigurement.

Injuries to persons may be due to accidents such as the breaking of a machine or a tool, the spattering of molten metal or the flying of chips, or they may result from unsanitary or injurious conditions such as are caused by smoke or poisonous vapors; persons may suffer temporary disability from physical weakness or from unavoidable conditions of employment, and quite often, inexcusable carelessness of the employees may be the cause of the injury. Whatever the cause, it is obvious that an injured person should receive prompt and effective attention, sometimes to prevent graver consequences such as blood poisoning, and sometimes to save even life itself, as when the injured person bleeds excessively.

If a physician or a professionally trained nurse is close at hand, it is of course safest to turn the injured over to his or her care; in most instances, however, such is not the case. Even where doctors and nurses are regularly employed in industrial plants or are located nearby, they may be engaged upon other equally serious cases or may be temporarily absent when they are urgently needed. Often also the nature of the injury, such as severe bleeding or unconsciousness from electrical shock, demands effective treatment without the waste of a single minute, when the time lost in taking the patient to the doctor or in bringing the doctor to the patient might prove fatal. Then there are the thousands of slight injuries like cuts of the hands or irritations of the eyes, when the injured persons will not take the time or trouble to go to the dispensary in the plant or to a doctor nearby, but will use unsafe methods of self-treatment, or will secure similarly harmful attention from a co-worker, who is as incompetent as himself to properly attend to the injury. For all of these reasons, it is becoming quite universally agreed that selected

*Reprinted by permission from the N. F. A. Safety Bulletin Number 17, which is issued by the Committee on Safety and Sanitation of the National Founders' Association.

persons in employment—usually the superintendent and some foremen, clerks or store-keepers—should be taught proper first aid treatment of injured or sick persons. Where it can readily be done and particularly in large establishments or where there is an unusual risk in the employment, the first aid instruction should be given by a competent physician and should be repeated periodically so as to keep the "First Aid Corps" in good practice.

One strong point that should be impressed on laymen who give first aid treatment to injured persons is that they are not rendering medical service and should not attempt to do so. First aid men are either supplanting in an effective way the slip-shod methods of the person who treats his own slight injuries or those of his fellow men, or they are doing in an intelligent way the necessary preliminary work in more serious cases, pending the arrival of a physician.

Often in order to save the expense of first aid instruction by a physician, but usually to supplement his efforts and to provide some readily available guide as to what should be done in emergency cases, first aid books are placed in the hands of first aid men. These books are sometimes rather voluminous because they go into a very complete description of the nature and character of the various injuries and ailments, point out their manifestations and, aside from giving instructions for their treatment, indulge also in lengthy explanations of the reasons for such treatment.

Bearing in mind the purpose for which first aid instructions are given and that the first aid man should never consider himself or be considered as a substitute for the physician, but rather as his emergency assistant, it would seem the wiser course to eliminate from these instructions every unnecessary word so as to reduce the reading matter and concentrate attention upon the things which should and should not be done. Quick action in emergency cases is of vast importance and no time should be lost in reading irrelevant matter or in searching through many pages of a first aid book. Finally, the instructions should specify the use of simple materials that may be readily available to first aid men and can be used safely and effectively by them. Concise instructions for first aid treatment, readily understandable by the layman, and calling only for a few commonly used materials, quite harmless in themselves, will, if properly followed, prove of inestimable practical value and eliminate much suffering.

It was with these ends in view that the first aid instructions contained in this bulletin were developed. Groups of physicians who had had large experience in treatment of injured persons in a great variety of employments were called together in conferences for the purpose of agreement upon the best methods for first aid treatment

by laymen, and the most effective and necessary medicaments, bandages and instruments to be used in this connection. "There must be *one best method* of first aid for each kind of injury; such best methods should be agreed upon in order that they may be recommended to industrial managers as a standard practice for treatment of their injured employees." This was the task placed before the physicians, and in addressing themselves to this task they reached tentative conclusions which were given practical tests, on the basis of which final conclusions were agreed upon at a subsequent conference. With these conclusions as a guide, first aid instructions were prepared and submitted to and approved by all physicians participating in the conferences. Other medical practitioners also confirmed the findings.

These instructions are therefore confidently recommended for general use as being practicable and effective directions for the treatment of injured and sick persons by laymen, with least chance of harmful consequences through unnecessary manipulation of the patient or the application of unsterilized water or the use of injurious medicaments.

Special attention should be given to the training of men in a method of artificial respiration of persons who are asphyxiated by gas, water or smoke or rendered unconscious by electrical shock. Instructions for resuscitation as given in this Bulletin follow the Prone Pressure Method which was recommended some years ago by the Commission on Resuscitation, composed of authorized representatives of the American Medical Association, The National Electric Light Association and The American Institute of Electrical Engineers.

If the uncounted thousands of injuries treated by laymen could be analyzed, the high degree of the effectiveness of such treatment would at once astonish and gratify. In quite a few instances, nevertheless, wounds even apparently slight in character which have received careful attention by first aid men, have developed serious consequences, because of under-estimation of the real extent of the injury or on account of the contributory cause existing in the impaired physical condition of the patient or for other reasons unknown to the first aid man. If these cases could be located promptly and put under medical care before they develop too far, much would be gained in still further popularizing first aid treatment by laymen. This may be done by adopting a first aid follow-up system which must, of course, be simple and inexpensive in character and practically automatic in its operation. The use of first aid record cards admirably fulfills this function. It is only necessary to provide each first aid man with a supply of these cards and instruct him to fill

out one for each injury which he treats and to forward the same promptly to the general office or works dispensary of an industrial establishment or to a responsible person designated for this purpose. The record should include the name of the injured person and a brief record of the injury. The recipient of the record card is thus afforded the opportunity of knowing exactly, day by day, who among his employees has been injured and the character and extent of his injuries; he is therefore in a position to follow up all injured persons and determine whether subsequent medical attention is needed and in that case furnish the same promptly. This follow-up system is inexpensive and wherever tried has proved very effective.

FIRST AID RECORD

OF INJURED EMPLOYEE

This card must be filled out and forwarded promptly to general office or works dispensary.

Name of Injured .....

Check or Clock No. ..... *Department* .....

Nature of Injury .....

Location of Injury .....

State whether Injured went back to Work, or to Dispensary, or Home .....

Remarks .....

.....

.....

.....

.....

Date ..... *Signed* .....

In some plants it may prove advisable to elaborate the information on the card even to the extent of calling for suggestions for the prevention of the recurrence of the accidental injury, or data may be added that will permit a study of the conditions under which accidental injuries occur most frequently. In general the simpler the card, the more surely will it be used properly.

First aid treatment of injured persons by laymen without any subsequent checking of the work may give rise to justified criticism; coupled with an effective, quick-acting follow-up system such treatment will be found efficacious in large employments as well as in small.

INSTRUCTIONS TO LAYMEN FOR FIRST AID TREATMENT OF COMMON INJURIES AND DISORDERS.

Wounds that Bleed.

ABRASIONS, CUTS, PUNCTURES

Drop 3% Alcoholic Iodine into wound freely, then apply dry sterile gauze to wound and bandage it. Do not otherwise cleanse wound.

SEVERE BLEEDING

Place patient at rest and elevate injured part. Apply sterile gauze pad large enough to allow pressure *upon, above* and *below* wound. Bandage *tightly.*

If severe bleeding continues apply tourniquet *between* wound and heart and secure doctor's services at once. Use tourniquet with caution and only after other means have failed to stop bleeding.

NOSE BLEEDING

Maintain patient in upright position with arms elevated. Have him breathe gently through mouth and not blow nose. If bleeding continues freely press finger firmly on patient's upper lip close to nose or have him snuff diluted White Wine Vinegar into nose.

Injuries Which Do Not Bleed.

BRUISES AND SPRAINS

Cover injury with several layers of sterile gauze or cotton, then bandage tightly. Application of heat or cold may help, other means are unnecessary. If injury is severe place patient at rest and elevate injured part until doctor's services are secured.

Eye Injuries.

EXCEPT EYE BURNS

For ordinary eye irritations flood with 4% Boric Acid Solution. Remove only loose particles which can be brushed off gently with absorbent cotton wrapped around end of toothpick or match.

Do not remove foreign bodies stuck in the eye. In that case and for other eye injuries drop Castor Oil freely into eye, apply sterile gauze, bandage loosely and send patient to doctor.

Splinters or Slivers Embedded in Skin

EXCEPT IN EYES

If easily reached withdraw with tweezers, then treat same as "Wounds that Bleed;" otherwise let doctor attend to it.

FIRE BURNS, ELECTRICAL BURNS AND SUNBURN

Do not open blisters. Use Burn Ointment (3% Bi-Carbonate of Soda in Petrolatum) freely on sterile gauze applied directly to burn. Cover with several thicknesses of flannel or other soft material, then bandage *but not* tightly.

ACID BURNS

Thoroughly flush wound with water, then dry wound, apply Burn Ointment and bandage as above.

ALKALINE BURNS

Thoroughly flush wound with water, then flood with White Wine Vinegar to neutralize (dilute vinegar for alkaline *eye* burns), dry wound, apply Burn Ointment and bandage as above.

EYE BURNS

Treat in the same manner as other Burns.

DISLOCATIONS

In case of dislocation of finger except second joint of thumb, grasp finger firmly and pull it gently to replace joint, then place finger in splint and bandage it. In all other cases place dislocated part at rest and promptly secure doctor's services.

FRACTURES

Make patient comfortable and secure doctor's services at once. Avoid unnecessary handling to prevent sharp edges of broken bones tearing artery. If patient must be moved place broken limb in as comfortable position as possible and secure it by splint.

In case of severe bleeding apply sterile gauze and follow directions under "Severe Bleeding."

DIZZINESS, HEADACHE, NAUSEA

Give patient teaspoonful of Aromatic Spirit of Ammonia in hot or cold water.

CHILLS AND CRAMPS

Give patient 20 to 30 drops of Jamaica Ginger in hot or cold water. If improvement is not speedily obtained send for doctor.

FROST BITES

Rub with ice, snow or cold water, then treat as "Fire Burns."

INSECT BITES

Treat as "Wounds that Bleed."

INTERNAL POISONING

Immediately secure doctor's services. Make patient drink large quantities of water preferably warm and make him vomit by sticking one's finger down his throat or by other means.

HEAT PROSTRATION

Give patient teaspoonful of Aromatic Spirit of Ammonia in hot or cold water. In case body feels warm apply cold to it; if necessary give cold bath. In case body feels cold and clammy, apply heat to it and immediately send for doctor.

UNCONSCIOUS FROM FAINTING

Lay patient on his belly and turn his face to one side. Loosen all tight clothing. Remove false teeth, tobacco, etc. from mouth. Apply cold to head, warmth to hands and feet. If breathing stops treat patient as directed under "Electric Shock." Give no liquids by mouth until patient is fully conscious. Then give teaspoonful of Aromatic Spirit of Ammonia in hot or cold water.

SHOCK, FOLLOWING INJURY.

In case shock is due to severe bleeding control it first as directed under "Severe Bleeding" and summon a doctor.

Lay patient flat on back and keep him warm with blankets, hot-water bottles, etc., and provide plenty of fresh air. Let patient inhale fumes of Aromatic Spirit of Ammonia. If fully conscious give patient hot drink or teaspoonful of Aromatic Spirit of Ammonia in hot or cold water.

UNCONSCIOUSNESS FROM ASPHYXIATION BY GAS, SMOKE OR WATER

Treat patient as directed under "Electric Shock."

ELECTRIC SHOCK

Immediately free patient from electrical circuit using every care to protect one's self against electric shock. Then if patient is unconscious, even if he appears dead, lay him on his belly with arms extended forward, turn his face to one side, remove false teeth, tobacco, etc. from his mouth and draw his tongue forward.

Kneel, straddling patient's thighs, facing his head, and resting your hands on his lowest ribs. Swing forward and *gradually* bring weight of your body upon your hands and thus upon patient's back, then immediately remove pressure by swinging backward. Repeat this movement, about twelve times per minute without interruption for hours if necessary, until natural breathing has been started and maintained.

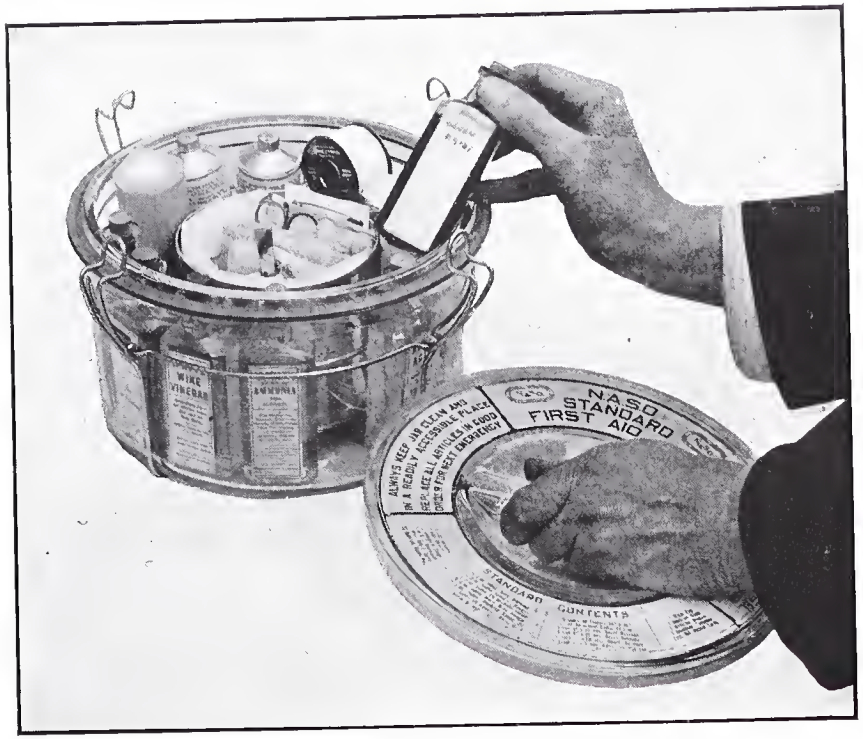
Meanwhile send for a doctor, have patient's tight clothing loosened, keep him warm and provide plenty of fresh air. Do not give patient liquids by mouth until he is fully conscious.

THE N. A. S. O. STANDARD FIRST AID JAR.*

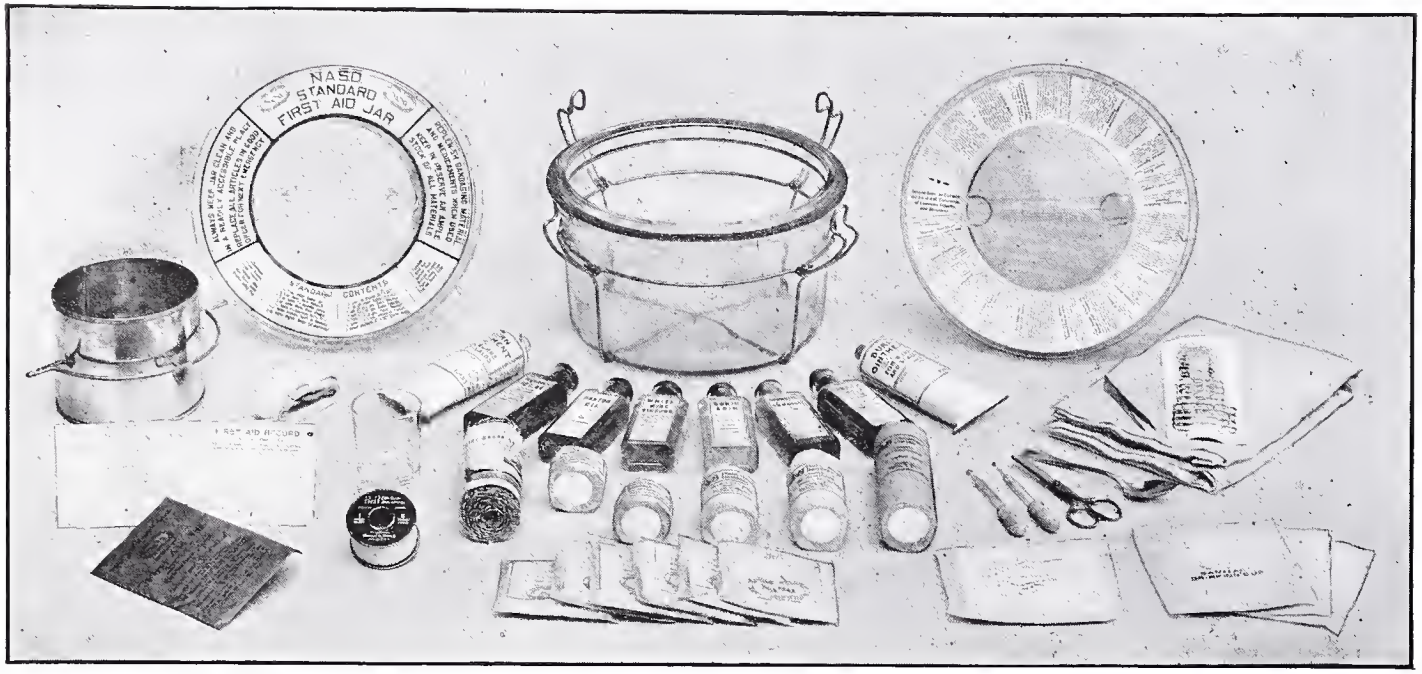
To train men in proper methods of first aid treatment of injured and sick persons, as outlined in N. F. A. Safety Bulletin No. 17, and not to furnish proper materials for this work would be doing half a job only; to furnish the materials and not to provide for their convenient storage and ready accessibility would be doing the job in a slip-shod manner. It is therefore important that first aid materials for effective treatment of slight wounds, or for emergency treatment of serious injuries, should be furnished and kept in a suitable container in which they can be readily carried. Such first aid outfits, in one form or another, are now in quite general use in industrial establishments, in stores and offices, in schools and even in homes.

For some first aid outfits, wooden or tin boxes are used as receptables for the materials. Wooden boxes are usually heavy and are inconvenient to carry; tin boxes are lighter in weight but are easily dented and are apt to rust. Both are open to the complaint that it is difficult to keep them clean and in good order. These out-

*Reprinted by permission from the N. F. A. Safety Bulletin No. 18.



The arrangement allows the quick removal of any article without disturbing the rest.



N. A. S. O. Standard First Aid Jar and Contents

(Illustration shows both sides of Jar Cover.)

1 Tourniquet
1 pair Nickel-plated Scissors
1 pair Nickel-plated Tweezers
1 Triangular Sling
1 Wire Gauze Splint
12 Assorted Safety Pins

1 2-oz. bottle Castor Oil
2 3-oz. tubes Burn Ointment
1 2-oz. bottle 3% Alcoholic Iodine
1 2-oz. bottle White Wine Vinegar
1 2-oz. bottle 4% Aqueous Boric Acid
1 2-oz. bottle Aromatic Spirit of Ammonia
1 2-oz. bottle Jamaica Ginger (or substitute)

1 piece of Flannel 24″x36″
1 roll Absorbent Cotten (1.5 oz.)
1 roll 3″x10 yds. Gauze Bandage
1 roll 2″x10 yds. Gauze Bandage
2 rolls 1″x10 yds. Gauze Bandage
1 spool 1″x5 yds. Adhesive Plaster
6 paekages 6″x36″ Sterile Gauze

1 Teaspoon
1 Metal Cup
1 Medicine Glass
2 Medicine Droppers
3 Paper Drinking Cups
First Aid Record Cards

fits have the added disadvantage that their entire contents, which cannot be seen at a glance, may have to be disarranged to get at a particular article which may be at the bottom of the box.

In order to provide a more sanitary equipment, glass jars have come into use as containers for first aid materials. Their advantages over wooden or tin boxes are obvious. If properly constructed, such outfits can be easily kept clean and quick access can be had to all materials.

The N. A. S. O. Standard First Aid Jar was developed to meet all requirements of a compact, convenient, sanitary first aid outfit. The jar itself is structurally strong and is made yet stronger by a special annealing treatment. It was designed with smooth surfaces and particularly with straight walls on the inside to promote cleanliness and facilitate the removal of first aid materials. In the glass of the jar is molded a convenient carrying handle and the cover is securely held on the jar by suitable spring clips which are a part of a metal cage in which the whole jar sets; this metal cage affords added protection against breakage of the jar. A rubber gasket between the jar and the cover makes the outfit dust-proof and equalizes strains in the cover. The jar is made only high enough to accommodate the bottles of medicaments stored in it so that the stoppers cannot come out of the bottles when the cover rests on the jar. Medicine bottles, bandages, absorbent cotton, burn ointment in collapsible tubes, and a wire gauze splint are set along the wall of the jar so that they are plainly visible from the outside and can be quickly located. A metal dish of special construction, placed in the inside of the jar, keeps the materials just mentioned in their proper place. The metal dish itself is used as a receptacle for other parts of the contents, such as tourniquet, medicine glass, gauze bandages, medicine droppers, spoon, scissors, etc.

A glance at the accompanying illustration and list will show that a surprisingly large number of articles are stored in the jar, which is only about 9½″ in diameter, 6″ high, and complete with contents weighs only slightly more than 12 pounds. Yet the jar includes every material, which a large Conference of Physicians, with extensive experience in the treatment of injuries, agreed upon as necessary for effective first aid treatment by laymen.

Even a splint is stored in the jar and for this purpose a strip of flexible wire gauze 30″ long and 4½″ wide is used, wound into a small roll. This can easily be cut, to the required length and can be shaped snugly around the broken limb; when held in place by bandages this splint affords ample protection to the broken limb until a physician can set the fracture.

Although it is not contemplated to use water in first aid work, yet when necessary, both the jar and the metal dish may be utilized as water vessels.

To furnish proper material for first aid treatment of injured and sick persons and not, at the same time, state how these materials should be used, would also be doing half a job only. It is necessary therefore to include in the first aid outfit suitable first aid instructions. If these were provided in the form of a book or leaflet, they might be misplaced or lost. In order that they may always be at hand in the most convenient form, the first aid instructions as given in N. F. A. Safety Bulletin No. 17, are printed on the inside of the cover of the jar, while on the outside appears the standard list of first aid materials which should always be kept in the jar, also brief directions for the use and care of the outfit.

Some employers will desire to place a N. A. S. O. Jar on each truck or wagon used in connection with outside construction work. In this event, the jar should be kept in the padded shipping box, which is provided with an opening in the lid so that the whole outfit can be carried by the handle of the jar. When desired a lock may be attached to the box.

The whole arrangement of the N. A. S. O. Standard First Aid Jar warrants the claim that it is a compact, convenient, sanitary first aid outfit. It is called the N. A. S. O. Jar because it has been standardized by the Conference Board on Safety and Sanitation and accordingly stamped with its N. A. S. O. (National Affiliated Safety Organization) mark.

PROCEEDINGS

OF THE

SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY*

HARRISBURG

*Beginning with this issue of the Bulletin the publishing of these proceedings will be commenced. This will be continued in subsequent issues until all the proceedings have been published.

PROCEEDINGS OF THE SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY.

GENERAL SESSION.

Tuesday, November 17, 1914, 10 A. M.

The Second Annual Pennsylvania Industrial Welfare and Efficiency Conference met in the hall of the House of Representatives, in Harrisburg, at 10 o'clock A. M., Tuesday, November 17, 1914. The Conference was called to order by Dr. John Price Jackson, Pennsylvania Commissioner of Labor and Industry.

INTRODUCTORY ADDRESS. JOHN PRICE JACKSON, COMMISSIONER OF LABOR AND INDUSTRY.

I desire to state that the Governor cannot speak before this meeting to-day, as he is out of the city, but will make his address to-morrow afternoon. This being the case, I shall personally say a few words with reference to the Department of Labor and Industry, as the first topic this morning.

Permit me to begin by welcoming you to this Second Annual Conference. The Governor, as the head of the State Administration, will welcome you to-morrow; but in his absence, I think I may be excused for taking this privilege to myself.

Last year, as you perhaps remember, we had quite an extensive Conference, which was possibly the first of its kind. It certainly was the first of its kind of any magnitude ever held in the United States; that is, a Conference in which employers and employees, experts in safety, hygiene, efficiency and welfare, and State officials, gathered together for co-operative work, with the intention of benefiting labor and industry and advancing the State's prosperity. At the end of that convention, the body passed a resolution, unanimously, that a convention be held this year. The Department of Labor and Industry, assisted, as it was last year, by the Engineers' Society of Pennsylvania, has arranged for this convention. Last year the convention was, to a large extent, one of obtaining information from speakers who were experts in their particular lines and who taught us various ways in which industry could be improved. This year we go further, and ask you to come here more especially in the

co-operative spirit, for the purpose of aiding the many projects that the State must undertake; and, therefore, you are supposed not only to gather valuable information from others, but also to present your own ideas. In order to arrange this plan to give the best results, it seemed wise to have two or three general sessions, in which certain topics of very common interest would be presented; and then divide the convention into sections dealing with three leading topics, as follows: safety to life; hygiene, in particular reference to health; welfare, with reference to improving conditions of the workers. I hope that every one who attends this convention will feel a personal responsibility to bring out valuable information.

If this convention proves to be useful and successful, we hope to make it an annual gathering that will possibly interest all State departments dealing with material affairs. We hope to have all those present at the conventions, who may have any relation to the work carried on by the Department. I think that such a result will undoubtedly be possible, and that our conventions will become of increasing value. A larger attendance and program will, of course, necessitate dividing the meetings into a large number of sections.

In the year and a fraction, since the Department of Labor and Industry has been established, a few facts have been impressed upon us, which I wish to bring to your attention. They will be dealt with in our working sessions at greater length, and I believe they will later require action by the Legislature, and need your support. For instance, the Bureau of Statistics and Information learned that out of some five thousand employees in quite a range of industries, about twenty-five per cent changed positions during the last year. We also have information that a very large number of employees, including casual laborers, changed employment during the same period. Now, when you multiply that ratio of change by the total number of employees in the State, you will see what a number of shifts there are from one establishment to another. Each shift necessitates a certain loss of time, which, in many employments, is quite large. Anything that this State can do to help make this shifting less, or to put it on a scientific basis, so that the loss will be reduced, will be of enormous value. Understand that when a man is idle a day, it is a direct loss to you and me; it is a tax upon us. That man and his family have to live, eat, be clothed and sheltered. He produces nothing while idle. Therefore, if he can have his unemployment shortened by fifty per cent through some agency, there would be a direct saving. From these statistics which I have given, it is evident that there is a field in which the individual and the Government can do service at a very small actual cost compared to the total saving.

The Department force, as a whole, is inclined to recommend the establishment of employment agencies, as one of the most necessary means for increasing the prosperity or man-power factor of the State and for reducing the waste of human labor. Such agencies located at the industrial centers of the State should be a means of reducing this enormous waste at a small expense. We believe in this method of employment. In Massachusetts, it has been successful. For twenty-five or thirty cents men are given employment in that State, by tens of thousands. This is being done in Wisconsin, Illinois and other states. Referring to a European country—Germany has worked out the details of industry with unusual care, and has taken up this employment agency business as a scientific proposition, making an unqualified success of it.

We do not, as a whole, believe much in centralization of Government, but we do believe that the number of officials should be kept down to a minimum for doing the necessary work. We believe that the local community should, as far as possible, handle its own affairs. Pennsylvania has a school system under a code, which, I understand from experts, is one of the best in the world. Our schools have advanced in efficiency by leaps and bounds since that code was established. We have a central board of education and superintendent of education. In order that the local board may get financial assistance from the State, it must carry out its work in conformance with the code of the State and with the orders of the board of education. In other words, we have the work done in the local community by the local people, but aided by the State.

In establishing employment agencies, we believe that the local industrial communities should be required by law to have such agencies, and to pay part of the expense; but that there should be a central agency, which would supervise the operation of the local agency, while the State would pay part of the expense of all. Such agencies could not only register men out of employment and learn where work could be found; but it could also be of value in showing a young man just out of school what sort of work to choose. Many of our youth, after leaving school to-day, soon drop out of the industrial game. They fail to make good because at the start they get into something they are unfitted for. They go on through life with little ambition and with no more efficiency after thirty years' work than after one. A large proportion of young people, if they were practically directed, would start on careers where their efficiency would be constantly increasing.

These agencies can be of great service in such times of depression as the present. They can be of enormous help to municipalities in carrying on their public works in such a way that in slack

times those works can be started up and employ at least a portion of the idle. Such agencies can be of service in getting large owners of properties to begin their buildings in times of depression for the purpose of making use of part of the unemployed. In other words, these agencies can do a great deal to prevent or alleviate the disastrous times of enforced idleness.

I should like to speak a moment about what we have found in the child labor situation, the first and most important part of which, in Pennsylvania to-day, is the lack of continuation schools. In Berlin, the boys and girls of fourteen to eighteen years of age study in school, home economics, locksmithing, the work of skilled mechanics, and all kinds of trades. They are in school six hours a week only, and during the remainder of their working hours they are in the shop. These schools are not blacksmith, machine and carpenter-shops—they are ordinary schoolhouses, where fundamentals are taught. For instance, the class in locksmithing studies the scientific basis of locksmithing; the teacher tells about brass or steel, what it is, how it is made; explains why the teeth on a metal saw are filed in a certain way, what the material is, why the shape is as it is; takes a lock and explains why this lock is made in such and such a way. 'After this class is over, the pupil goes to his desk and writes what he knows about the subject.

This is a method that teaches the boy to think about the work he is doing during the time he is in the shop. It is the kind of instruction that teaches the boy to become more and more attached to his work, thus to become a larger producer, to earn a larger return for himself and the country and so to improve the prosperity of both. Together with their practical work, they have very careful studies in their own language, a course which, in this country, would be unusual. They are taught not only to write simply and sensibly and reasonably, but they are taught to speak in the same manner. They are taught about the laws of the shop, about their relations to their fellow-employees and to their employers; how they should live in their homes; about accident prevention; about the fundamentals of their government. This goes on for six hours a week for four years.

The German manufacturers say they believe that these continuation schools do more than any other thing to make Germany the leading industrial nation in the world. I believe that under as favorable conditions, our continuation school system would result as it has in Germany.

Another item of the child labor condition at present, is the night work which we believe should be eliminated, for it is certainly injurious. The hours of labor for children should also be revised ac-

cording to the best modern ideas; but most important of all, is the medical examination of children. Our law now says that the child must be more than fourteen, and cannot go to work even then, unless physically capable; but it makes no provision for medical examination. Tens of thousands of young people between fourteen and sixteen years of age are going to work. We tried an experiment in Philadelphia with the co-operation of the Department of Health, members of the Child Labor Association and others. We found upon examination that, among four thousand children, between a third and a half were suffering from defects, and needed medical attention. We found probably a score—and that is enough—who were absolutely unfit, and if put to work would probably die, or be ruined for life. To improve this condition, it is only necessary that we go to the very small expense of having all of these children carefully examined.

We made quite a thorough investigation into the immigrant problem. We did this because the law creating the Department states specifically that a study should be made into labor conditions, including more particularly the condition of immigrants. We made a study of their individual living circumstances, and also of their ability to get work, their ability to learn English, their ability to learn Civics. The suggestion I made to you with reference to employment agencies, will settle the proposition with reference to governmental ways by which they may be helped to get work and be protected from exploitation. We do not find, however, any systematic or effective work for teaching the immigrant the English language. We do not find any systematic work for teaching him the fundamentals of our Government. Tens of thousands of foreign men, women and children are coming to Pennsylvania who are exploited by the unscrupulous members of their own race, who have been longer in America and have learned enough English to mislead the ignorant newcomers. Such happenings are numerous and show the great need for very systematic methods of protecting our immigrants. We should have good schools where these immigrants can get practical training in the English language, and in at least the fundamentals of our form of Government. This is necessary not only for industrial prosperity but also for the common safety of all our people.

Another important matter that will be taken up at this meeting is that of industrial compensation. As I said in discussing accidents, the man who is hurt and the family dependent upon him, must eat, and be clothed and have shelter. It seems perfectly reasonable that the industry in which he is hurt should bear these expenses as part of its burden, just exactly as it bears the burden of buying raw material. I shall not continue this matter further, as we shall have a whole session upon it.

The next section of my talk this morning has to do with co-operation; and in speaking of co-operation, I am merely repeating in a way what I said to the convention last year, that I believe the law intended this Department to work with the people, both employers and employees. When the Department started, we found that one of our duties was to go to a mill and put guards on dangerous parts of machinery, or guards in other dangerous places. But we found that there was little specific information as to just what sort of guards should be put in such places. There was also a tendency on the part of the force to ask for guards that were either impracticable or unnecessary. What were we to do? We could write out theoretically what was to be done on each machine, as if we knew the machinery of all the various industries, which would have been absurd. We should have written out a beautiful pamphlet. It would have looked well, but would have been impracticable. Instead of doing this, we called committees together, following the idea of co-operation. These committees up to the present time, have numbered about twenty. The number of people attending the meetings has been about three hundred and fifty, and has represented employers and employees; and what is of greater value, representative employers and employees; and managers—even presidents—have had no hesitation in losing from one to five days in coming to these committee meetings for the purpose of helping us make proper standards by means of which we could advance the safety of establishments in a reasonable, proper manner. The committees which have already gone far in their work are: Blowers and Exhausters, Nuts and Rivets, Compressed Air, Electric Apparatus, Foundries, Polishing and Grinding, Bake Shops, Steam Engines, Machine Tools, Transmission of Power, and Wood-Working Machinery.

If we had had these men here at the expense of the State, it would have amounted to many thousands of dollars. I mention this as an example of real co-operation, and I believe we are gradually establishing a series of standards which will aid enormously in promoting accident prevention. I consider that Pennsylvania has taken the lead in this particular branch of work. We have about sixty odd groups of standards in all, but it is difficult, we find, to get people to study them. We need a still wider co-operation.

This convention must give a large part of its time to bringing out information which will aid in producing hygiene and welfare standards. We started a proposition similar to that in New Jersey, of appointing special temporary representatives in each industrial establishment, who should be a kind of connecting link between the Department and establishment, for the purpose of mutually im-

proving the conditions in that particular plant. There have been a good many hundreds of such representatives appointed, and the work has reached a point where it is really effective, although it has just started. We hope before another year is past that there will be twenty-five thousand such representatives. We can appreciate that to have an official at each plant would be an enormous expense; but by having an employee who is presumably the head of the safety organization of the plant, as a special representative of the Department, we can accomplish as much good, as through an official, and at practically no expense to the State and little to the industry.

We have had the services of the North American Civic League in the investigation work having to do with immigrants. We have had likewise a very large amount of work from several employees of the Consumers' League in regard to the Department's efforts in Philadelphia, also from the Philadelphia Department of Health and the Child Labor Association, in our investigation into the propriety of having medical examination of children, and from the National Council of Safety which has been a strong right arm to us. On the whole, much valuable work has been done in this co-operative way, amounting to as much, in a monetary way, I presume, as the yearly cost of the entire Department, or to very nearly as much.

I do not know that it is really the proper thing to speak of the work which the Department has accomplished, although I shall say a few words in closing concerning it. The Division of Inspection has directly or indirectly, installed safety guards in numbers which amounted to hundreds of thousands. Between one and two million letters and pamphlets have been sent out, along the line of the educational work required to be carried on in reference to safety, to health and concerning other Department functions. You may not fully comprehend what an enormous mass of work this has involved; but it means that everybody in the Department has been doing a little bit more than he really could do with the highest efficiency. Scores of safety first meetings have been held throughout the State. Investigations have been made as to labor and industrial conditions, such as the one at Bristol, having to do with working conditions, and, with the living conditions of men in different businesses and industries, and with child labor in the mercantile establishments and mills. Strikes involving a total of more than thirty thousand men have been settled, largely through the medium of the Department and those who have co-operated with it. I may say with reference to strikes,—we have gone rather slowly on the project of settling with industrial establishments, because it is a new field. But I am now confident that, in most cases, if employers

and employees would call in the services of the State before their differences become too great, such disputes could be amicably adjusted. In most cases we found disputes based on misunderstandings on one side or the other, rather than on the actual inability of the two sides to get together. There has been published by the Department, a complete set of the labor laws, which also includes the decisions of the courts, a copy of which may be had on application to the Department. Some fifty thousand accident reports have been tabulated—each of which, if printed, would occupy an ordinary page. These have been tabulated so that an employer can see whether he is having as few accidents as some other industry or more; he can also see the character of the accidents, and the places where they happened. We believe that such information can be of great service to the industries and important also in showing up for an example, conditions better than the average. This accident report will become part of the compensation law machinery when the compensation law goes into effect. We have also published a monthly bulletin, which will be continued, giving the best information we can get with reference to safety projects. We believe that this has already been of material service, and will improve as time goes on.

The enforcement of the labor laws is very well established. There are places where we meet with opposition; but I believe, considering the length of time the Department has been at work, the enforcement is fairly satisfactory. I would not say entirely satisfactory, because I do not believe that any Department, unless it happens to do something perfectly, should be satisfied. Fire-drills have been enforced as rapidly as possible. We believe that the fire-drill, in particular, is one of the functions of the Department upon which we can do a great deal more work. It is an important method of protecting people in mills, especially big mills, which employ hundreds of men and women on the fourth and fifth floors. You may have stairs and fire-escapes and fire-doors; but when you have six hundred or more people on several floors, and a sudden fire occurs, the stairs and fire-escapes are frequently a poor means of exit, and without fire-drills they become an actual menace. Personally, I believe in fire-walls, so that people from one side can go to the other side without going down stairs.

The Department has also published a directory of twenty-five thousand names of industrialists in Pennsylvania. A large proportion of the labor organizations is included in it. A copy of this work can be had from the Department. We got it up particularly because we had to have the names; but we then thought it best to publish it, and make it available to the people of the Commonwealth.

After this very brief outline, let me close with the statement that we owe very great thanks to the people of Pennsylvania, who co-operated with us so earnestly—organizations and individuals—and without stint of time or money. We could not have done our work even as well as we have done it without this co-operation. If you look over the long list of laws putting duties upon this Department, you will appreciate how very ineffective only fifty people are, to visit all the stores, factories, blacksmith-shops, machine-shops, and the various other places of business, and to see that everything is in accordance with the law. It is a physical impossibility, and therefore, the necessity for your co-operation. In the Bureau of Statistics and Information and in the Division of Hygiene, we have the same condition. Therefore, in thanking you very sincerely for your past co-operation, we also request, and even go further and demand, that those who have the time shall continue their co-operation with us.

The first topic this morning will be Community Welfare, by Miss Florence Hughes, of the New Jersey Zinc Company. Her talk will be illustrated by lantern slides.

COMMUNITY WELFARE.

Florence Hughes, New Jersey Zinc Company.

There has been no stage in the growth of the world that has not brought to mankind its problems. To those of us who are here, one of the most vital problems is the one of adjustment between the industrial and social worlds. This problem is fast becoming the keynote of prosperity or non-prosperity throughout the civilized nations.

The greatest men of every age have been those who have offered the best solution to the problems of their day. For this reason, it is a most hopeful sign that the men who lead in the control of the great industries of the world are now turning their minds to the solution of the difficulties presented by the two factors—man as a social human being, and man as a part of the great industrial machine—two factors which were a short time ago so widely separated.

It is through the consideration of this new adjustment that we now find the terms, "sociological welfare work," "safety device," "experimental department" and "department of sanitation and accident prevention." These terms were not to be found in the business vocabulary of a century ago.

To us in America, great changes have come in a comparatively few years. The inrush of immigrants, the over-crowding in the cities and the development of large industrial centres, have produced conditions which make the need for inter-dependence and co-operation more essential to the prosperity of this country than to any other nation. If we take the question of our industrial centres, we find much the same conditions existing among the laborers and their families, whether the centre be in the city, town or country. Almost without exception we find the immigrant bearing the brunt of the hardest labor. His lack of training, his inexperience regarding conditions of living, his limitation of language, relegate him to the rank of the minimum wage-earner, in spite of his valued physical endurance. The immigrant laborer in our industries is not only handicapped by these limitations, but is often confronted by the race prejudice of a boss who underrates his value to labor. This boss has long been the only mediator between the foreigner and the corporation. From this has arisen many of the serious labor problems of the day, and at this point the task of adjustment begins, a task that can be accomplished only through judicious welfare work.

The first real work of a social kind by the New Jersey Zinc Company of Pennsylvania was begun at its plant at Palmerton about fifteen years ago, where there was then only a small group of farms. The next seven or eight years saw the growth of the town to two thousand inhabitants, and in 1907, it had many attractive homes, a park, electric lights, modern sewerage system, bank, hospital, and several churches. These improvements were provided by the company, anticipating the time when the town would become a borough. With so much that was outwardly attractive at that time, there was practically nothing being done to meet the needs of the physical, mental and moral welfare of the people. The population was made up of Pennsylvania Germans, Hungarians and Slavs, three elements having nothing in common. The schools were scattered and poorly housed. The churches were each doing a share of Sunday work, but in between times nothing was being done for the general welfare of the people. Nothing was done to bring together the various elements and provide a common interest. The activities of the young people were not utilized. There was nothing being done to establish any civic or community spirit in this fast-growing town that was made up almost entirely of strangers to each other. Confronted by the barrenness of this sort of life, the company decided that corporation responsibility toward these human beings warranted the establishment and support of an institution which would offer fuller opportunities to the men and their families. On the well-proven ground that a well-trained, right-thinking, contented

human being makes a well-trained and intelligent workman, plans were made for the development of Settlement House Work.

Slide No. 1 shows a view of Palmerton and Slide No. 2, two small dwelling-houses which were being built in July, 1907, which were connected and furnished for use as a Neighborhood House. What was a Neighborhood House used for? Only two answers could be given to start with: (Slide No. 3) Palmerton was to have a kindergarten—the first in Carbon County—and the teachers were to live in the House and to form a Home Centre, to which all who were willing to come, would be welcome at any time of the day or evening. Beyond that, time must indicate the lines of development. The school children showed the next step and came in remarkable numbers, until it was necessary to reckon upon their regular attendance, and thus afternoon classes were formed. Games and stories were so new and interesting that they filled all needs up to Christmas-time. After the Holiday festivities were over, the need for organized work presented itself and classes were formed in various kinds of handwork.

As the summer season drew near, a new and urgent need presented itself—a public playground, and one was promptly and generously provided. Slides Nos. 4 and 5 show the playground with the Slavic Band and gymnasium drill being given by foreign lodges, and the Maypole party given by the children who had been in the Neighborhood classes during the winter.

The steady growth of the town and the consequent increase of numbers in the attendance at the Neighborhood House, made it necessary to enlarge both equipment and space. This was done, and a new house opened in May, 1911.

Slides Nos. 6, 7, 8, and 9. This playground proved one of the greatest boons to the welfare of the town, and during the succeeding three summers, its boundaries and possibilities were altogether outgrown. In June 1914, a new and larger one was built and equipped. The new site is along the creek which skirts the town, and offers an attractive, terraced water-front, with benches for comfort and enjoyment, and a wading-pool for the children. There is an aggregate monthly attendance of 14,000, made up of children and adults, of many nationalities; and they have had a whole season without a fight and without an accident of any serious nature.

Slide No. 10 shows the exterior of the new Neighborhood House. Slide No. 11 shows a group of kindergarten children on front steps. Slide No. 12 shows the main entrance-hall and stairway. Slides Nos. 13 and 14 show the kindergarten room that is used not only for the kindergarten class, which has enrolled eighty children between four and six years of age, but also for dancing and folk-danc-

ing classes, club meetings, handwork classes and classes for foreigners' English. We have, this winter, a class of 135 adult foreigners who are being taught practical English; first the necessary phrases for the simple home life, then the language which will help them in their work, including technical terms which they need to know, and lessons in connection with safety and first-aid methods. They are also taught, through their English, the advisability and possibility of owning their own homes; and the building, buying and selling of the homes as offered by the company, is made part of their English lessons. The English work is in charge of a trained worker, assisted by volunteers—young college men from the Plant.

Slide No. 15 shows the reading-room and library in which there are about sixteen hundred books for free distribution, among them a good collection of Hungarian and Slavic books; also about twenty popular magazines are on the tables for reading.

Slides Nos. 16 and 17 show the gymnasium which is one of the most popular rooms in the house. It serves not only for gymnasium classes and basketball games, but for public entertainments and public meetings. One of the most valuable uses of the gymnasium is the Saturday Night Open House, which was instituted in a small way in the old Neighborhood House. Every Saturday night without fail, the house is open to the public for general recreational purposes; there is something for all—kindergarten-room, club-rooms, library, game-room, bowling-alleys, and the gymnasium for dancing. All available seats are crowded with members of families, who have gathered to watch the dancing. There is an attendance on Saturday nights ranging from three hundred to six hundred people of all ages; this means that up to the present, with a population of six thousand people, Palmerton has thus far escaped the evils of a commercial dance-hall, and it is not probable that one, even if opened, would prove a great success in the near future, for the taste for clean, healthy, protected amusement has been cultivated.

Slide No. 18 shows a scene in a folk-play, given in the gymnasium by the Hungarian Dramatic Club.

Slide No. 19 shows the bowling alleys. Slide No. 20 shows the carpenter-shop which is used not only for manual training-work, but for band practice. We have two bands—one town band, made up of American men at the plant, and the other made up of foreigners. The interest of the town in the bands and the part they play in all parades and civic demonstrations, has been shown in the erecting of a new band-stand, the money for which was contributed by the citizens of the town. The stand is in the park, and concerts are given once a week during the summer. The band-stand is for the use of both bands.

Slide No. 21 shows the cooking class room and our boys' cooking class. This picture is chosen because the boys' cooking class is more unusual than the girls' cooking class, and has proven one of the most popular and successful of our classes. We have one hundred school-girls enrolled in the different cooking classes, and classes for working girls and older women are held every evening.

In the domestic-science and manual training work, the Neighborhood House is supplementing the work of the public schools. Two public schools, one with a three-year high-school course, have been built and are supported by the town; but as yet neither of the courses mentioned has been included in the public school curriculum. For the past two years the schools have co-operated with the Neighborhood House by sending all boys and girls above the sixth grade to the Neighborhood House during school hours, giving credit for the work done there as though done under the school roof, thus proving one of the features advocated by the Gary School System. The boys and girls below the sixth grade are cared for by classes after school hours.

In addition to the activities shown in these slides, we have carried on a sewing class for children with an enrollment of one hundred girls; dressmaking, lace-making and basketry classes for older girls and women. We have also a banking system, known as the Penny Provident Bank, the headquarters of which is in New York. The deposits from the kindergarten children alone have been over four hundred dollars a year. This money is deposited in a National Bank and kept for the children until needed by the parents, and we find that it is generally withdrawn for some useful purpose, such as new shoes or clothes, instead of being wasted, penny by penny, on candy and the movies. We have also a large organization for boys between twelve and twenty years of age, known as the Junior Co-operative Association, shown in Slide No. 22. These boys aim to follow in the civic work, the pace that is set for them by the Men's Co-operative Association—a town organization which holds its meetings monthly at the Neighborhood House.

The Association numbers about sixty boys, divided into squads of ten or twelve boys each. These squads are under the leadership of young men whose standing in their businesses and personal relations qualifies them to act as "big brothers" to the small group of boys in their charge. Some of the squads are doing carpenter work, others are taking gymnasium work, while others are working in the fife and drum corps. One group is studying to become "scouts," the latter to remain as a part of the Co-operative Association and to join them in all civic work.

Slides Nos. 23 and 24 show the Co-operative boys and camp-fire girls, who all had, at various times through the summer, a camping experience at Lake Mineola, a delightful spot about eighteen miles from Palmerton.

There are five camp-fire circles, averaging ten to twelve members each. There girls come from every rank of life to be found in Palmerton, and the camp-fire work is doing much to help each girl to learn the lesson to "cleave to these others, your sisters, wherever, whenever you find them," and to strengthen the girls' respect for the "homely duties of home" and to show them how to make closer bonds between the home life and the wider public life which every girl of the present day shares.

During the past year, we entirely outgrew the possibilities of the present Neighborhood House—especially at the kindergarten end. The schools were not in condition financially to assume the burden of a kindergarten, and the company decided to provide a place for another kindergarten. To this end, a small house was taken in another section of the town, and this is shown on Slide No. 25.

This house has been equipped with a kindergarten, which is now enrolled to its limit of sixty, fifty-five of whom are foreign children. On the second floor of this house there are two rooms furnished as club-rooms for men. Owing to the location of the house in the immediate vicinity of the foreigners' homes, it has been adopted by them, and they meet there daily in large numbers and with absolute freedom, to smoke, play cards and other games, and to enjoy the music of a victrola. In this house there is also a dispensary-room for the trained nurse who works in connection with the Neighborhood House and the Hygienic Department.

Owing to the generally healthful conditions of the town, both as to its housing and general sanitary condition, the greatest field of work for the nurse is in corrective work, especially among the foreign babies, where they are unwisely and irregularly fed, too closely housed, and over-clad.

During the summer, one of the regular duties of the nurse is to visit the playground and dress the neglected wounds of the children. The children are frequently followed into the homes and are used as an entering wedge for righting wrong conditions. Many of the nurse's calls come from the physicians in the town. Others come directly from the families, and in many cases the nurse will pay a visit without a call, when hearing of sickness, and always receives a warm welcome. There is no surer way of getting a hold upon the foreign homes and winning their confidence than through the work of a trained nurse who carries with her a true human, as well as a professional, interest in her patients.

There are two other phases of the welfare work which are included in the company's policy—the Safety and Hygiene Departments. Their work is too comprehensive for me to do more than to point out facts, which will show consistent efforts towards welfare and efficiency throughout the organization. From the start fifteen years ago, the question of safety to employees and the conditions under which they work was carefully considered. In 1911, an active campaign in the interest of Safety First was organized. A committee chosen chiefly from the heads of departments was appointed; an inspector, whose entire time was devoted to this work, was selected to report to this committee. All accidents were carefully investigated and suggestions made for prevention. After the safety work was well established and many practical safeguards installed, the first committee retired, and another was appointed in its place, a Workmen's Safety Committee, under the permanent chairmanship of the Safety Inspector. Experience has proven that the most important work to be done along safety lines is not in guarding machinery alone, but rather in educating employees to the importance of Safety First in their work. It is this feature of the work which makes the Workmen's Committee of so much importance. This committee devotes one day each week to safety work.

Slide No. 26 shows guarded saws and exhaust-hoods in the carpenter-shop, and a suction-pipe which takes care of all the sawdust, preventing this material from getting into the men's lungs.

Slide No. 27 shows a simple but effective device for preventing accidents while unloading brick or other material from box-cars. The wheel of the wheelbarrow runs in a groove so that it is impossible for the wheelbarrow to go off the run and pull the operator after it, as has happened so often in this kind of work.

Slide No. 28 shows safety wrenches. In unloading cars of the type shown in the picture, we use safety wrenches of our own design. There is a knuckle in the wrench which allows the wrench to become disengaged and prevents its flying around as the doors of the car suddenly open.

Slide No. 29 shows the men wearing goggles as they chip castings, to safeguard the eyes from the flying particles.

Slide No. 29-A shows a gate guarding one of the wagon-entrances to the plant. Employees are not allowed to walk through this gate, but are compelled to use a bridge, which goes over the tracks. A watchman is stationed at this gate to make sure that the tracks are clear before passing a wagon through the gate.

Slide No. 30 shows the method of guarding counterweights. The falling of counterweights has caused many accidents.

Slide No. 31 shows safety belts. In cleaning our ore and coal cars, we find it necessary to send men inside of the cars to clean

out the ore and coal which sticks to the sides. When working on trestles, men have lost their lives by slipping and falling through these cars, and we now insist upon all men wearing safety belts, which are attached to a rope of such length that in case the car should be bumped by an engine, and the man thrown from his foothold, his feet would not go below the doors of the car.

Slides Nos. 32 and 33 show the standard protection for belts and machines.

Slide No. 34 shows the use of the pulmotor. This last slide leads to the work of the Hygiene Department. We have at each plant an official surgeon to take care of occupational diseases or accidents, all expenses of which are defrayed by the company. At two of the plants—Palmerton and Franklin—hospitals have been established.

Slides Nos. 35, 36 and 37. In addition to these, we have established at all plants a central emergency hospital, with dressing stations in the various departments.

Slide No. 38. The Safety Committee at each plant has been instructed in the first-aid work, and the committee being large, each department has one or more representatives.

All accident cases are referred from the department dressing station to the central emergency hospital and from there, regardless of the severity of the case, to the company surgeon or to the hospital, should he not be in the plant at the time. The surgeon at each of the plants makes a monthly tour of inspection of the plant and reports as to its sanitary condition. In states requiring it, or wherever lead ore is used, monthly inspection of men exposed to toxic substances is made, and should evidences of poisoning be found, the men are transferred to other departments, where they will not come in contact with such material. Every accident, occupational disease or illness of any sort is reported each month to the staff member on hygiene, who, in his report to the General Manager, compiles a percentage-statistics table, in the hope of competition making the sanitary and safety committees more active, and thereby reducing the percentage of accidents and diseases.

Slides Nos. 39 and 40. After much thought, and not a few experiments, the most practical house for the laboring population has been found to be the bungalow, containing four rooms and toilet, back and front porches and a garden. The houses are underdrained, and rent for $7 and $7.50 a month. In a garden contest of 1914, eighty per cent of the entries (180 in number) were foreign gardens, and six of the ten prizes offered were won by foreigners.

Slides Nos. 41 and 42. The most direct outgrowth of the sociological work at the Palmerton plant has been in the work organized at Franklin, New Jersey, the centre of the company's mining interests. At Franklin advance efforts are being made along hygienic and safety

lines as at the other plants. The same general conditions exist in the life of the working people, as were found in Palmerton in 1907, with the exception that the public schools of New Jersey are better than the majority of those of Pennsylvania, and therefore, the children of this town are better off than they were at Palmerton. Sociological work was begun in a small way by the school principal, who organized sixty-three of the boys into the Borough Boys' Improvement Association.

Slide No. 43 shows the school shop, where boxes were made. Slide No. 44 shows the boxes made by the boys, and placed on corners of streets. Slides Nos. 45 and 46. Efforts were made by the boys toward keeping the streets of the town clean. A pond at Franklin made it possible to have a swimming pool. It was necessary first to have it drained and cleaned; this was done, and two bathhouses built. As much of this work as possible was done by the boys.

The company gave the town an athletic field of five acres. Slide No. 47 shows the field, and No. 48, the grandstand.

Slide No. 49. After an investigation, the company decided to organize at Franklin, a Neighborhood House on the same general principles as the one at Palmerton. An old store building was renovated and remodeled, and opened in November, 1913. In it they have a large kindergarten-room, reading-room and library, offices for district visiting-nurse, game-room for men and boys on the first floor; a bowling-alley in the basement; and on the second floor, living-rooms for resident workers and caretaker.

Slide No. 50. The Franklin work has grown in a most satisfactory way from the very beginning. The kindergarten has an attendance of over ninety children and an active and enthusiastic Mothers' Club. During the summer of 1914, a successful Better Baby campaign was carried out with practical baby saving exhibits. This work has been followed by a baby clinic, which meets every Saturday afternoon. At this clinic the babies are weighed by the trained nurse and practical suggestions are made to the mothers in regard to the general care of the babies, and a physician's help recommended where the babies are not gaining as they should. The Franklin Neighborhood House takes frequent advantage of the easy access to the beautiful country surrounding them. Field-days are enjoyed by kindergarten children and mothers, camp-fire girls, and boys' athletic teams. The camp-fire girls and borough boys have taken many hikes under suitable leadership and have spent time at camp with their leaders.

Slide No. 51. At the rear of the Neighborhood House a large plot of ground has been made into a garden, with space for games in the centre and small plots for individual gardens all round it. The game-room and bowling-alleys of the House are in constant use, and

in every way, the Franklin works is a constant proof of its own success.

Sociological or welfare work in connection with any corporation should not be gone into as a form of philanthropy, but as a good business proposition. With this in mind, in beginning social work in a community, I recommend it be begun in a small way, developing along the lines indicated by the needs of each community; that it be begun with the children, and that it be begun educationally; therefore, the kindergarten makes the best starting-point, and through it the workers have the closest point of contact with the homes through which the community is to be reached; that it have a flexible policy and be without the limitation of race, creed or sex; and that those undertaking it, go into it anticipating its growth and willing to meet the demands of success, which mean as time goes on, increased equipment and enlarged space. Just to what extent this is to be carried, of course, depends entirely upon the special conditions to be met.

Welfare work is not intended to offset fair wages. To the credit of those who are doing welfare work, be it said that investigations have proven that corporations who are doing welfare work do not fall below the scale in question of wages. But the wage that is fair to the workman from the point of view of value given to his employer means to the large mass of laborers a wage that is not sufficient to supply his family with more than the necessities of life. It means that he is not able to provide anything in the way of education, which the public does not offer him. It means that he cannot provide suitable recreation for his children, and it means that he cannot provide them with books. Therefore, whatever the laborer and his family are to have above and beyond the necessities of life must, under present conditions, come entirely from outside sources. To meet the objection sometimes made to welfare work by unions, on the ground that the money might be put into wages, I would add that the working man as a *unit* too often is not worth the sufficient wage to give these advantages to his family, and in too many cases would not use the money for such purposes when earned. But the body of workmen, representing the composite labor of an organization, should have, not as charity, but as business justice, the best that the company can afford to give them. If the industry to which the laborer belongs is located where he has access to good schools, public libraries and clean recreation-places, the corporation's responsibility is lessened; but it is seldom that large industrial plants are so located that the working men can have these advantages. Therefore, it would seem that the responsibilities of providing something above the bare necessities of life is up to the

corporation. For in the end, it is from the laborer and to the laborer to whom our great industries have to look for their existence and their prosperity.

Before leaving the question of purely welfare work, as separate from any question of safety and sanitary work, which is fast becoming a part of the law, I should like to speak of the question of appreciations. We are often asked, "Do the people appreciate all this?" If by appreciation we mean "presenting their thanks for what is being done for them," I would say, "Very seldom." But if we mean gladly taking advantage of the opportunities offered, I say, "Yes." Let us stop to realize that the last human quality developed is appreciation. Therefore, do not let us be too quick to expect those who need our help, to develop, as one of the first qualities, this power of appreciation.

Will the corporation get its return for the money invested in welfare work? That is a question which cannot be answered in dollars and cents. It is an output from which the return must come in an intangible form, but we believe that it does come in the form of better workmen, better citizens, and more united organizations. I should like to state that the foregoing has not been offered as a pretty picture. It is something real and if you are interested enough, come to see what is being done.

Dr. Jackson:

I have understood that the New Jersey Zinc Company has made it a point not to be paternal in the way of welfare measures, but has joined with the employees to gain these ends through co-operation between the employer and the employee. It is only in this great country of free people that a corporation can do any service whatsoever by such methods.

I should be very glad to hear from any persons present who have messages to deliver, or any discussion upon the topics that have been presented. I should also be glad to have my own talk discussed. In these sectional or general meetings there is to be no distinction of person and one has as much right to speak as another. We have had, of course, to designate persons to open topics. In doing so, we have taken representative employers and employees and experts not only to give and get information, but to cover the field of industrial activity as widely as possible.

The names of speakers each day will be distributed with the programs. The reason for this is that it was impossible for us to determine absolutely on our program for each day early enough to print the names. Furthermore, it was suggested that we emphasize

the topic rather than any particular man; and I think there is a good deal in this suggestion.

Is there anybody who cares to open the discussion this morning? If not, we shall adjourn until 2 o'clock for the sectional meetings.

SAFETY SECTION SESSION.

Tuesday, November 17, 1914, 2 P. M.

The meeting was called to order by the Chairman, Mr. Carl Hansen, of the Workmen's Compensation Service Bureau, of New York City.

The CHAIRMAN:

The first subject under discussion will be "Elevator Hazards." Personally, I had this phase of safety considerations very forcibly brought to my attention about a week ago in the building in which my office is located. A bootblack was going to our floor for the purpose of shining the shoes of one of our engineers. While he was stepping off the car, the operator started it, resulting in the boy's tripping, and falling down the hatch five stories, breaking both his legs; and he is to-day in a condition where it is problematic whether or not he will live. The gentleman who will address you is eminently fitted to do so. He is in daily contact with these hazards and accidents, and is particularly interested because the company he represents pays out good money for accidents. I take pleasure in introducing Mr. John Wright, Superintendent of the Bureau of Inspection and Accident Prevention of the Aetna Life Insurance Company.

ELEVATOR HAZARDS.

John Wright, Superintendent of the Bureau of Inspection and Accident Prevention, Aetna Life Insurance Company.

In discussing elevators, safety should by all means have first consideration. Hundreds of accidents that occur should never happen, for the great majority of them are due to preventable causes. An elevator can be made practically safe; and with reasonable care in its operation and frequent inspection, accidents can be reduced to

a minimum. It is not my purpose to go into technical details regarding the construction of an elevator; nor do I think it necessary in order to show the dangers that attend elevators.

A person intending to install an elevator will get just as safe an elevator as he is willing to pay for. Some elevator builders, I have reason to believe, will not install an elevator that is not safe, so far as the hoisting apparatus itself is concerned. The machine will be capable of carrying and controlling the loads; the cables will be sufficient in number; the overhead supports will be of ample strength and stability; the car will be substantially constructed; all with a liberal margin for safety. Limit stops will be placed on the machine or elsewhere, a safety device will be installed to catch and hold the car in the event of the cables breaking—in fact everything necessary to insure the car against falling or running into the overhead work will be provided when the car is first installed.

There are some elevator builders not so particular, and if a prospective purchaser comes to them and tells them that they want an elevator but will not pay beyond a certain price, the builder will endeavor to design an elevator for that price. But he will be obliged to sacrifice some elements of safety, provided the law does not restrict him in so doing.

A contract with an elevator builder does not always go beyond the installation of the hoisting apparatus—that is the hoisting machine, the car and the necessary hoisting equipment and safety appliances. Often with the completion of this part of the work the builder has fulfilled his contract and has done the work in a proper manner. It does not follow, however, that the elevator is a safe proposition. Other accessories go with it, which to my mind are equally important from a safety viewpoint, and these concern the hazards connected with the shaft and the shaft openings.

It is here that the purchaser will sometimes try to effect a saving in cost. If the elevator is not strictly for passengers, the car may be a platform with no enclosing sides, with sometimes a space between the platform and the walls of the hoistway sufficient to allow a person, or a piece of material to slip through and fall down the shaft. For protection at the landings there is perhaps a bar, or a chain or a low gate. It is an established fact that the majority of elevator accidents is due to lack of proper protection of the hoistway. The Industrial Commission of Wisconsin has published a record of the 198 elevator accidents that occurred in that State from September 1911 to January 1914, of which 22 were fatal. The total number of accidents was 198, classified according to the following causes:

Falls from elevators into shaft, car not enclosed,.....	7	fatal	2
Falls into shaft, no gate, or protection deficient, ...	25	"	3
Falls into shafts: persons opened gates or doors, ...	6	"	0
Caught between elevator platform and floor or door casing, ...	71	"	10
Caught between elevator platform and top of gate,....	11	"	0
Hit by objects falling down shaft, ...	14	"	1
Elevators dropped while carrying persons, ...	31	"	3
Hit by counterweights, ...	6	"	0
Car started while being loaded, no landing locks, ...	8	"	2
Struck by elevator when in pit, ...	9	"	1
Miscellaneous causes, ...	10	"	0
	198		22

The classification shows that 31 persons fell down the shaft and 3 were killed. Eighty-two persons were caught between elevator platform and floor or door casing, and between platform and top of gate, and ten were killed. Usually the proportion of fatalities from these causes is much larger. It appears also from the table, that 68% of injuries were due to the car not being enclosed or to deficient protection at the hoistway openings.

Now let me analyze this list of accidents and suggest methods of prevention. Seven persons fell off the elevator, which could not have happened if the elevator had been enclosed. Therefore, sheathe or place substantial iron grill work around three sides of the car, except at the entrance side. If two sides of the car are used for entrance and exit, those sides should have collapsible gates, one of which should be kept closed when the side opposite is being used. If the elevator is used for passengers, then the four sides should be enclosed with the exception of a part of the side used for ingress and egress. The unenclosed part should be no larger than the opening in the shaft enclosure provided for entering the elevator. I do not include here hand power elevators or sidewalk hoists because these machines are not intended and never should be used to carry persons.

Twenty-five persons fell down shafts because there was no protection or the protection was deficient. Accidents from this cause do not usually occur at passenger elevator shafts because as a rule these shafts are adequately protected. With freight elevators this is frequently not the case. Often you will find nothing more than a single bar set loosely in sockets, or a chain hooked at the sides, or a frail low gate insecurely placed to guard the entrance. Such protection as this is almost equivalent to no protection at all. The bars are very liable to be removed and not put back, and the chains left

unhooked, and even when in place they are but a miserable apology for safeguards. Not only are these poor methods adopted to guard the entrances but sometimes they are also applied to the other sides of the shaft where the shaft is not enclosed. Then again the entrances may have solid hinged doors, which if kept closed and locked are good protection, but they are often left open for ventilation or other reasons. Under these conditions it is little wonder that persons fall down the shafts. This danger can be overcome by enclosing the elevator shaft to a height of at least six feet, or better still, by extending the enclosure to the ceiling. The landing gates should be filled in and extend to a height of six feet from the floor. They should also extend to the floor. Furthermore, they should be so arranged that they can only be opened without a key from the inside of the shaft. An open doorway is a standing invitation for persons to enter and persons do not always look to see what is immediately beyond.

Six persons fell down shafts because the doors or gates were not securely latched or were left slightly open. These persons finding that the doors could be opened did open them and walked into space. Seventy-one persons were caught between elevator platform and floor or between platform and door casing. These two causes may be attributed to lack of provision to securely latch the door before the elevator left the landing or to carelessness on the part of either the operator or the injured person, or perhaps on the part of both.

If the operator starts his car at the same time he starts to close the entrance door there is an interval when the door is open with the car moving rapidly away. It frequently happens that a person on the car suddenly decides to get off at the landing the car is leaving, or a belated passenger tries to get on the moving car. In either case he may not be quick enough and is caught. These accidents are not uncommon and usually are fatal.

The practice of starting the elevator before the landing doors are securely closed is a bad one but is often indulged in by operators who like to exercise their skill or for the purpose of saving time. The remedy for these accidents is to provide a locking arrangement whereby the car cannot be moved away from the landing until the entrance door is securely closed, and the entrance door cannot be opened until the car floor is at a level with the floor landing. This obviates carelessness on the part of the operator because the locking arrangement compels him to be careful.

The locking arrangement is sometimes objected to on the ground that time is lost in waiting for the door to close and this is unquestionably true to a certain extent, for I have been on fast moving elevators where the door and the car had been started in motion at the same time and the door did not snap closed until the car had almost reached the next landing. Such operation, however, is tak-

ing too great a chance with human lives, but as between the loss of a little time and safety, the argument of speed should have no standing whatever.

Eleven persons were caught between the top of the gate and elevator platform. This was due to the persons leaning on the gate with some part of their body extending over the top rail. The remedy is obvious. Make the gate so high that a person cannot lean over it. Six feet is a safe height. Or if the gate is a vertical sliding gate and there is not sufficient headroom to allow for a six foot gate, place the gate 12 inches back from the shaft, when the gate need not be more than three and one-half feet high, as with the gate back 12 inches from the shaft there would be little or no chance of a person leaning over the gate being struck by the elevator as it was passing.

Fourteen persons were hit by material falling down the shaft. These accidents are usually caused by objects rolling under gates or through unguarded entrances and falling on persons on the elevator below. Sometimes a man working at the top of the shaft will drop a tool or bolt or piece of machinery. To prevent these accidents, keep the shaft opening closed. Extend all gates to the floor, with a board extending across the gate at the floor line. Cover the top of elevator with substantial grill or other material. Place substantial grating under overhead work on which workmen may stand safely, the grating to be sufficiently close to prevent ordinary tools falling through.

I have dwelt at some length upon the hazards incidental to the shaft, shaft entrances and open car, because the work done in connection with these features, in many instances is apart from the work done by the elevator builder, and the responsibility for safe conditions rests upon the owner and depends upon how far the owner wants to go and how much money he is willing to spend to make conditions safe.

Some persons seem to think that having put in an elevator which will do the lifting work required, they have done about all that is necessary and the safe guarding of the shaftway is not a matter that concerns them to any great extent. It is for such irresponsible ones, that it is necessary to frame legal requirements, compliance with which, tend to insure the safety of persons who are obliged to work about elevators or ride on them. The elevator builder as a rule does his work well, as is evidenced by the comparatively few accidents that occur due to the elevator falling or running away.

When, however, a car does fall, through breaking of the cables, the consequences are liable to be very serious, for instead of one individual being injured or killed, as is the case when an accident happens from some other cause, a group of individuals may be the

victims. Reputable elevator builders endeavor to anticipate accidents of this character by equipping the elevator with an efficient safety catch which will act and hold the car in case the cables break, slack, or the car attains excessive speed due to some derangement of the machinery. This device constitutes one of the most important safety features of an elevator and no elevator can be considered complete without it, with the possible exception of the plunger type. Different types of safety catches are used but I think that the most desirable type for elevators having a travel speed of more than 20 feet is the Speed Safety, which does not depend upon the breaking or slackening of the cables before it can act, but will act whenever the car goes beyond a speed for which it is set. An elevator will sometimes, owing to some trouble in the machine, attain great speed, and if there is not a Speed Safety to catch it, the operator may become panic stricken and lose control. For elevators that do not have a travel speed of more than 20 feet, the Instantaneous Safety Catch is preferable.

Another very important safety feature of all power driven elevators is the limit stop, which automatically shuts off the power when the elevator reaches a certain fixed point in the shaft. It is desirable in connection with electric elevators, that in addition to the limit stop, there be located in the shaft at a point slightly beyond where the limit stop is supposed to act, a limit switch which will cut out the power, and stop the car in the event of the limit stop not having already done so. Limit stops should be independent of the controlling mechanism. Sufficient clearance should be provided at the top and bottom of shafts to allow a margin of safety in the event of the car sliding beyond the terminal limits.

Every enclosed elevator should be provided with a means of emergency exit by which the persons therein can get out in case the elevator is stalled between landings owing to the power being cut off. The exit can be through the roof of the car if it is in a single shaft, or if there are a group of elevators, an opening can also be made in the side of the car through which one may pass to a car in an adjoining shaft. Persons have been held prisoners in a stalled car for hours before they were freed, and for aged persons and those of a nervous temperament it is a most trying experience and liable to have serious effects upon their physical condition.

As for doors or gates on passenger elevators, there is a difference of opinion as to the advisability or the necessity for them on some cars, particularly those where the opening takes up only a part of the width of the car and the operator stands so that he can observe it if his passengers are in a dangerous position. I favor the door for all passenger elevators and especially on express elevators. On local

elevators, that are likely to stop at every floor, it may not be necessary to close the door except when the car is crowded or when a passenger shows a tendency to stand too near the entrance; but on express elevators running a number of floors without a stop and at a high rate of speed, the door should always be closed.

Projections in hoistways should be eliminated. When the car is enclosed, the danger from the projections is only at the entrance side. They usually exist because the floor sill extends into the shaft. The floor sill should be made flush with the wall of the shaft. Recesses caused by the door being set back from the shaft create a condition similar to the projection, the top of the door casing forming an abrupt angle, between which and the car platform a foot might get caught and crushed, if it extended over the platform. The best remedy for this condition is to bring the door to the edge of the shaft so that it could be flush with the shaft wall. Where this is not possible a metal plate should be placed beneath the door frame extending downward away from the shaft at an angle of about 60 degrees. Counterweights should be enclosed at the top and bottom of the hoistway and at any other point of their travel where there is danger of anyone being struck by them.

All elevators controlled by a hand rope and not having a regular operator should be provided with a cable lock by means of which the operating cable could be locked when the elevator was being used at a landing, which would prevent anyone at another landing pulling the rope and starting the car. Many serious accidents have been caused in this way.

One is apt to think that the falling of elevators is about the only real danger connected with them; but the record shows that accidents due to elevators falling are few as compared with the number that occur due to the shaftway and entrance hazards.

No elevator, or any part of its equipment should be neglected for any length of time or left to take care of itself. From being a safe conveyance, it can easily soon become a very dangerous one. The passenger, and the user of the elevator in many cases give little or no thought to its condition. The care of the elevator rests with some one else. If it is there to be used, they consider it safe and they have a right to think so. The elevator should be inspected frequently by someone who thoroughly understands it and who knows where the vital parts are and when they become a menace. Elevator Safeties are of no use unless they will work, and although they are so important a factor in insuring the safety of the elevator they are often neglected. An emergency might arise at any time, and then the safety devices should be of service. I have seen Safeties so rusted that it was impossible to move them with ordinary tools and they

had to be taken off and taken apart. They had not been tested so far as anyone knew since the elevator was installed, years before. Again they would be so out of adjustment that they could not get a grip on the guide rails, and in that condition they were useless. It is not everyone who understands how to test a Safety and it is some trouble to make the test. These two reasons very likely account for their neglect in so many cases. Sometimes an elevator falls, and the question is asked, why didn't the Safety work? It didn't work simply because it couldn't work. When an elevator is installed a test is made of the Safety. If it meets the requirements of the installation test, there is no good reason why it should not always do so, if the equipment is kept in order. The same discussion applies to the limit stops and limit switches. They also are emergency devices and no one can fortell the moment when their proper working will prevent a catastrophe. The cables and cable fastenings are also important features and should be carefully examined. The safety appliances, cables and supports are the vital parts of an elevator and only a person having expert practical knowledge of elevator construction and installation is qualified to make the inspection and tests, to determine whether they are in good order and will perform the functions they are designed for. As regards the hazards of the hoistway, they are always in evidence and it does not require an expert to find them. Anyone can tell when the elevator door or gate is open; when the latches are out of order and do not hold the door or gate closed; when there is only an inadequate guard at the hoistway, and when the elevator platform is not enclosed; these are the dangers that everyone can see but are so often overlooked. An elevator that is properly installed, regularly inspected, well taken care of, and carefully operated, is practically immune from accidents.

CHAIRMAN:

The next topic is "Hoists, Cranes and Conveyors." Mr. H. A. Schultz of the American Steel & Wire Company, of Pittsburgh, will address us on this important matter.

HOISTS, CRANES AND CONVEYORS

H. A. Schultz, American Steel and Wire Company, Pittsburgh.

This subject is so broad and includes such a variety of equipment essential to the different industries in handling their product, that it would be impossible to attempt to discuss all types in the time

specified. Therefore, I shall endeavor to touch on the subject only in a general way, and devote most of my time to a discussion of the proper construction of overhead traveling cranes from a safety standpoint.

In this present advanced period of activities, manufacturing and industrial concerns, while vitally interested in the capacity and production of their business, do not overlook the importance of the conservation of life. By the perfection of machinery through the intellectual and untiring efforts of man, quality has been placed on an equal basis with quantity, and with quality and perfection come the welfare of the employee and the endeavor to eliminate industrial accidents. Up-to-date business men, in the industrial world, now place Safety on an equal footing with output, quality and cost, and have safety organizations to conduct this end of the business as well as any other. Such organizations not only see that all machinery in, or entering the plants is fully provided with the necessary safeguards to protect employees, but they also look after the employees' general welfare by conducting educational and hygienic campaigns beneficial to the health of the men and their families.

The human element will always enter seriously into problems which have to do with the safe operation of machinery, and too much pressure cannot be brought to bear on the adoption of safety educational measures that will train the men always to act carefully. A safety orgauization should include not only the manager, superintendent and men in charge, but every employee in the plant, and no organization will be perfect without the aid of every man. There must be harmony and team-work in this organization as well as in any other if success is to be achieved.

Only trustworthy sober men, who are absolutely dependable, should be placed in charge of hoisting or conveying machinery, and they should be made to follow hard and fast rules which, by experience, have proven the most reliable in the prevention of accidents. Some of the largest industrial concerns in this country have recently issued instruction that hereafter all promotions will be made from the groups of men abstaining from the use of intoxicants, and have even requested that men operating hoisting and conveying machinery, sign temperance pledges. Men in charge of such equipment, and especially those who are handling hot metal or material equally as dangerous, must have a clear mind and be steady and alert at all times to meet every emergency that may arise. Some concerns require a rigid examination and a complete record of all such operators, to insure that they secure only the most intelligent and competent men.

Industrial concerns should not treat lightly the subject of employees for this class of work as it is a matter of the greatest importance. Wages should be of such a scale as to be attractive to the better class of men; in fact, men should be selected from the electrical or mechanical departments who have complete knowledge of such machinery and its operation. The position should be one of promotion rather than demotion, as is the practice in the majority of cases.

In small factories, or departments where such equipment is used only a few minutes each day, the expense of an operator to remain at his position all the time is not warranted; but at least two of the most intelligent men in the department should be chosen and thoroughly trained. If it so occurs that neither of these men is on duty, a regular experienced man should be summoned from the head of the electrical or mechanical department; a green-horn or even a man with slight experience should never be allowed to operate any kind of hoisting and conveying machinery, but should always wait for the man detailed, who can be depended upon to do the work safely. Failure to wait for the right man may result in personal injury to a number of men, as well as heavy damage or loss to equipment.

I can recall a case where a regular crane operator was instructing a new man for one of the hot metal cranes in an Open Hearth department. Everything had been working nicely for some time, so, not realizing or stopping to think of the danger, the regular operator left the new man to lift and handle a ladle of hot metal. He was successful until he started to lower, when he became confused in the controllers and instead of trying to ascertain the trouble, immediately jumped out of the cab and made his escape on a runway provided for emergencies, on the outside of the building. The ladle of metal, in the meantime, came down and turned on the pouring floor, endangering the lives of all working in its vicinity. Luckily there was no explosion and no one was injured, the only loss being that of the metal.

Rules pertaining to the safe operation of cranes should be posted in the cage and strictly followed by the operators. A few suggestions for such rules are as follows:

No one but a regularly authorized operator is allowed to use any crane.

When on duty, remain in crane cage ready for prompt service.

Never go on top of crane or permit any one else to do so without opening switch and placing warning sign or lock on it; when you find this signal on switch, do not close same until you are absolutely sure there is no one on crane or crane runway, who might be caught.

Before racking carriage or moving crane bridge, be sure that hook is high enough to clear all obstacles.

Under no consideration permit your crane to bump into another crane until you are positive that no one on the other crane is in a position to be injured.

Examine your crane every turn for loose or defective gears, keys, runways, railings, warning bells, signs, switches, sweep-brushes, cables, etc., and report any defects found. Keep crane clean and well lubricated.

When crane is down for repairs, assist repairman. After completion of any job, make sure that belts, tools, etc., have been removed so that no damage to machinery will result when crane is started, and so that nothing can fall off crane. Keep tools, oil cans, and other loose objects in box provided for that purpose.

Do not carry load over men on floor, use warning gong to attract their attention.

Do not allow men to ride on load carried by crane, or on crane hooks.

Do not move load without signal from proper man.

When handling heavy loads, particularly hot metal, test hoist brake by throwing controller to "off" position after load has been lifted a few inches; if brake does not hold load, do not move crane until it has been repaired or adjusted.

Do not carry objects up and down ladder; use rope for handling anything too large to go into pocket.

In addition to the inspection of a crane by the operator, as mentioned above, a regular inspector should go over the equipment at least once a week and turn in a written report on a specially prepared blank. In this manner it is reasonably certain that mechanical defects will be ascertained before any great damage is done.

It is very pleasing to note the progress that has been made in the construction of this equipment from a safety standpoint. This has been due principally to the intense interest and activities of the State, Industrial and Manufacturing concerns in their endeavor to create the best conditions possible, and eliminate the accident hazard. The State departments are working constantly in the right direction in the preparation of standards essential to the protection of all equipment; these will give the industrial man and the manufacturer an idea of what is desired. Some of the larger industrial concerns, profiting by their long experience and superior force of engineers, have even gone farther and prepared their own safety specifications, which must be followed by the manufacturer in building new machinery. Of course where such specifications are prepared, the local requirements, such as local building codes, city ordinances, etc., should be observed and if there is any direct conflict between such specifications and such legislation, the latter should take precedence.

Overhead traveling cranes should be installed with every convenience for the operator, inspector or repairman. This should include a complete set of runways and platforms by which all parts of the crane can be reached. The manner of reaching these overhead runways or platforms from the ground should be preferably by means of a stairway, but where this is impossible, the only other convenient means is by a permanent or fixed ladder. In order to lessen the danger of the operator falling when going up to or down from his work, any straight permanent ladders should be provided with a safety cage, about 27″ inside diameter.

On a complete installation, the runway walk on the cab side should extend the entire length of the runway, so that the operator or any one who has work to do on the crane can enter or leave it safely when in any position. There should be a stairway at each end of this runway, and on long runways it is best to have one at the center. On the opposite side from that on which the crane cab is located, there should be a platform extending 15 or 20 ft. along the runway for repairing the bridge wheels or for making other repairs to this end of the crane. If there are two cranes on the same runway, there should be two of these platforms and if a third crane is on the runway, there should be one located in the center. The idea of having a platform for each crane is so that if one crane is down and needs repairs, it will not tie up the others. Access to these latter platforms can be obtained by passing over the bridge walk on the crane, and it will not be necessary to provide separate means for reaching these platforms from the ground.

The construction and workmanship of the crane itself should be first class in every respect, and designed with the following factors of safety based on the ultimate strength of the materials used when under full rated load stresses:

Parts subject to dynamic strains, such as gear shafts, drum shafts, gears, hooks, blocks, etc., not less than 10.

Hoisting cables not less than 8.

Girders and other parts subject to static strains, not less than 5.

For journals and axles, the dimensions should be increased until the bearing pressure and deflection come within safe and durable limits.

For cranes handling hot metal and other extra hazardous service, the factor of safety given above for hoisting rope should be increased at least 25%.

Calculations for wind pressure on outside cranes should be based on not less than 30 lbs. per square foot of exposed surface.

Over-head traveling cranes should be what are known as "All Steel" construction. No cast iron should be used except for minor

parts, such as drums, bearing brackets, caps, boxes, etc., where strength is not of primary importance. No wood or other combustible material should be used in the construction of cranes.

All bolts should be through type, and no studs or cap screws should be used, unless by a special agreement; bolts should be suitably secured from turning, and equipped with approved lock nuts or lock washers.

For cranes with a capacity of 5 tons or under, bridge track wheels should be not less than 18″ diameter; for capacities of over 5 tons, they should be not less than 24″ diameter. Trolley wheels should not be less than 12″ diameter. All track wheels should be preferably either of rolled open hearth steel, .70 or .80 carbon, or of cast iron or steel bodies, equipped with rolled steel tires shrunk on,—no cast treads should be used. The wheels should be accurately finished for diameter and tread required, and the tread should be of sufficient thickness to carry the rated load when wheels have been reduced 1¼″ in diameter.

The crane should be well supplied with foot walks, which should be located the entire length of the crane girders, either on one or both sides, as the conditions may require; also across either one or both ends of the trolley, at right angles to the bridge walks, from which the crane mechanism can be easily reached. Where there is only one walk along the bridge girder, there should be a walk across the side of the trolley opposite. If the bridge is provided with two walks, one on either side, this would serve the same purpose and it would not be necessary to install a walk on the three sides of the trolley.

All walks should be of substantial steel construction and rigidly braced so as to eliminate vibration. The width of the main walks should be preferably not less than 30″ from the outer edge to the web of the girder; the width of the trolley walks should be not less than 15″. The floor of these walks should be made of checkered steel plate, not less than ¼″ thick, which should extend from the outside of the toe board to the bridge girder and be fitted neatly where irregularities occur, so as to leave no openings through which material or tools may fall. The railing should be riveted structural steel construction, with two horizontal members, not less than 3′3″ high and toe boards at least 4″ net in height should be provided.

Wherever possible, all walks should be so arranged that there will be sufficient head clearance between the floor of walk and overhead trusses or other structural members. There should be a clearance of at least 18″ between railing of bridge walk and nearest part of the trolley.

The operator's cage should be securely fastened to bridge girders and well braced to minimize vibration. This cage should be large enough to allow ample room for equipment and operator, and should be enclosed to a height of 3′3″ from the floor with sheet steel or woven steel fabric. If this is not so enclosed, and only guarded by railings, a standard toe board not less than 4″ in height should be placed around the exposed edges.

A safe and convenient arrangement should be made to allow the operator to pass from the cage to foot walks and bridge girders. This should be preferably in the form of a stairway, leading from the inside of the cage or a permanent protected platform just outside; but where this is impossible, a ladder can be used, which should also lead from the inside or a protected portion of the cage, so there will be no danger of the operator falling to the ground when using it.

In order to make the cage entirely fireproof, the floor should be made of $\frac{3}{4}''$ impregnated asbestos board on steel plate, not less than $\frac{1}{4}''$ thick. Ladle and other cranes subjected to heat from below should have $\frac{1}{8}''$ sheet steel shield below the bottom of the cage floor. As additional protection to the operator in case of an electrical fire, the cage should be equipped with an approved fire extinguisher filled with non-conducting fluid.

All parts of the crane should be readily accessible and so designed that it will not be necessary to remove any keyed parts, or disturb any other shafting in order to change any shafting on the crane. The hoisting shafting, carrying gears, pinions, drums or sheaves should be of forged open hearth steel. The net required section should be increased in diameter by not less than twice the depth of the key seat, and the over-all shaft diameter should be in even lengths of an inch. All connections subject to torsion should be pressed or shrunk on and keyed in place and press fits should be made with a pressure not less than nine tons per inch diameter. Shafting and couplings should be entirely enclosed and covers so designed that they are readily detachable, and supported in such a manner that they do not revolve with the shafting.

All gears should be enclosed with oil and dust proof covers, conveniently arranged for inspection and lubrication, and strong enough to retain the whole gear or any parts which might break or fall. Keys for gears should be secured in some approved manner to prevent the possibility of their working loose. Unprotected keys should not be left projecting on ends of shafts, but should be covered or otherwise protected. Over-hung gears should be eliminated wherever possible and no split gears should be used.

The installation of the switch board, wiring and all other electrical equipment should comply fully with the requirements of the

National Board of Fire Underwriters. With the exception of trolley conductors, all apparatus carrying electric current must be thoroughly insulated, enclosed or guarded in such a manner that there will be no danger of accidental contact with live parts.

Trolley conductors should be preferably of soft steel bars, or other suitable rolled steel sections, with tinned joints and good mechanical supports. They should be preferably located outside and above bridge girder, on the side opposite the bridge motor in convenient relation to foot walk. Under no consideration should their location be such that they may be brought into accidental contact with the hoisting cable. The bridge conductors should be located along the runway girders opposite the crane cab, so as to eliminate danger of the operator or others coming in contact with live parts when in or entering the crane cage.

Open type controllers should have asbestos lined steel guards over the movable contact parts, and rheostat and resistance units should be protected from accidental contact or mechanical injury by a suitable enclosure, with adequate provisions for ventilation.

The crane switchboard and its equipment should be enclosed in an asbestos lined steel cabinet, with swinging door arranged so it can be locked, and should preferably be placed in the rear of the cage.

The equipment for this board should include one double pole main line switch, one double pole magnetically operated circuit breaker, with an individual double pole overload relay and fuse for each motor on the crane. The circuit breaker should be so designed that it will open automatically if the current supply fails and remain open until closed by the operator. This board should also have two pilot lights.

In addition to the main switch on the crane switchboard, there should be a main line switch mounted above the cage, where it can be reached conveniently from the foot walk. This switch should be so constructed that it can be locked in the open position by repair men while making any repairs or doing any other work necessary on top of the crane.

The crane hoist should be equipped with an approved system of dynamic braking. The dynamic brake should be supplemented by two magnetic holding brakes of approved type, either of which should be sufficiently powerful to hold the rated load independently under regular operating conditions. One of the holding brakes should be on the armature shaft and the other on the intermediate reduction shaft. Also there should be a foot brake for the bridge travel, of ample capacity to control the crane under full load and at full speed.

The friction brakes should be preferably of the shoe or multiple disc type, so constructed that they will be equally efficient in either direction and enclosed or guarded in such a manner as to eliminate the danger of loose or broken parts falling to the floor.

Each hoist should be provided with an approved limit device, which should preferably be tripped directly from the hoisting block or hook. It is also well to employ dynamic braking in connection with the hoist limit to check the sped of the motor.

Hoist should be equipped with approved steel cables and not chains. Cables should be of plow steel inside and crucible steel outside, or of all plow steel—6 strands, 37 wires to the strand. For ordinary service, cable with a hemp core can be used, but this should be of soft iron where subject to excessive heat.

The drums should be so designed that there will be not less than two full wraps of hoisting cable in the grooves when the hook is in the lowest position. The pitch diameter of the hoist drums and sheaves should be at least thirty times the diameter of the cable and they should have flanges at each end not less than 1″ thick and projecting at least 2¾″ from the body of the drum. The bottom sheaves should be protected by close fitting guards to prevent the rope from becoming misplaced.

The hook block should be of an approved type, so arranged that it will lift vertically without twisting; hooks should be of solid forged steel or laminated steel construction, built up of solid plates and where possible, provided preferably with ball bearings.

Substantial bumpers, equipped with springs or other approved form of cushioning device, should be provided at the end of the trolley travel. These bumpers should be securely attached to the bridge girder and not to the rail.

Where there is more than one crane on the same runway, suitable bumping blocks should be placed on the end carriages or equalizing trucks at each end of the bridge girder, these also to have springs or other approved cushioning devices. In addition to the bumpers on the cranes, where two or more cranes are on the same runway, there should be temporary bumpers that can be clamped securely to the rails for use when making repairs. This will prevent other cranes from bumping into the crane that is down, and thus eliminate danger of injury to the repair man.

Guards or fenders of steel plate or forgings should be placed in front of each of the bridge truck and trolley wheels, these to extend down on each side at least ½″ below the head of the rail, and to be rigidly secured in a position far enough in front of the wheel to prevent danger of crushing a man's hand on the rail.

Sand boxes to sand the runway rails should, where specified, be operated from the cage. Heavy lugs or brackets should be placed on trolley frames and end carriages in order to limit the drop of 1″ or less, if a wheel or axle should break. Trucks should be provided with adequate pads for use with jacks or wedges, when changing track wheels, and the crane should so be designed as to permit changing wheels by simply relieving the bearings of their weight.

For the protection of workmen underneath, a pan or flooring of steel plate, not less than 3/16″ thick, should be attached to the trolley frame so as to eliminate danger of objects falling from the trolley to the ground.

Suitable tool boxes of sheet steel construction should be permanently attached at convenient points in the cage or on the crane runway, and these should be large enough to contain the necessary tools, oil cans, etc. The latter should not be left lying about on the crane for fear of jarring off and injuring some one below.

A plate showing the rated capacity of each hoist in pounds should be placed on girder in such a manner as to be clearly legible from the floor.

On all other types of hoisting and conveying machinery the same degree of safety should be followed as on the larger units, and materials, factors of safety and construction, should be chosen to suit conditions.

Conveyors of all types should be fully protected with the necessary guards and devices to make their operation safe in every respect; also they should be provided with locking devices so that when making repairs, the repair man may be assured of his safety by inserting his lock and keeping the key in his possession. Operators or repair men working around any equipment of this type, should be specially instructed and provided with all the necessities for doing their work in absolute safety.

CHAIRMAN:

All of us who have had any actual practice with overhead cranes will, I am sure, appreciate the practical merit of the paper just presented, and it is desirable that we should have a discussion on this subject.

DISCUSSION

W. E. Chick, Safety Engineer, Pennsylvania Steel Co., Steelton.

Crane hazards are so many and so varied that it is difficult to afford complete protection for the operators and the men engaged about them, but with the conditions in the preceding article complied with, the hazards should be brought to a minimum.

Even with the most complete system of guarding and protection, conditions of an extraordinary nature will arise which must be taken care of immediately; and upon the quickness and intelligence of the men engaged in such work, depends the safety not only of themselves but of all those in their vicinity.

Our experience has shown that crane hazards come not so much from the cranes themselves as from the handling of the material by the cranes, and the elimination of this danger becomes a matter of properly instructing and caring for the men engaged in such operations.

As an illustration of hazards that often occur, I cite a case in our steel foundry. A gear wheel was so badly worn that replacement was necessary and three machinists went on top to do the work. While this was in progress, another crane came up to do some work and by a confusion of signals the operator of the crane upon which the repairs were being made mistook the signal on the other crane for one given to him, and one of the repair men had his foot drawn into two enmeshing gears.

Another class of accidents comes from work which is carelessly done from the crane runway. We have had considerable success with railway torpedoes for notifying the operator that he is approaching the danger zone where men are working, as well as for warning the men that the crane is near. The explosion of the torpedo has been found to make ample noise of such an unusual character as to be heard across the noisiest mills that we have, and attracts the attention of the operator in a manner impossible with the human voice.

On some of the cranes the operator is far below the crane runway and in such cases, in addition to the torpedoes, lighted red lanterns are slung down the line of the operator's vision, showing the limit within which he cannot take his crane.

While these facts are, strictly speaking, outside of the subject under discussion, they are called to your attention as a precautionary measure in caring for a condition which is more dangerous in my belief than would be the fact that the crane might not be guarded as thoroughly as the possibilities would allow.

In looking over the accident list it will be found that many more men are injured in work around the crane, handling material than on the crane itself, and it becomes consequently more important that they be educated and safeguarded in addition to the crane guarding.

CHAIRMAN:

I am sure there are more here who have ideas on cranes. These are open discussions, and only by discussions are we to get the good out of the papers which are presented.

W. E. Firth, Safety Engineer, Midvale Steel Company, Philadelphia.

Like Mr. Chick, I should like to say something more about the human equation. I haven't actually been operating cranes, but I try to teach people how to operate them. One of the speakers said that a good thing to do when the crane was under repair was to cut off the switch. It is; but that is not all that is necessary. I have an accident in mind. Three cranes were on one runway—one under repair—and the switch was thrown out. One man was standing near the bridge, while another crane came along and bumped this crane. It only moved about two inches and moved the gear of the bridge half a revolution. It took off this man's fingers. I cite this to show that no matter how you try to guard against accidents, they will occur. Then it was suggested that a stronger bumper be put on. It was suggested to have a second stop, so that if it went over one, it would stop on another. That was all satisfactory. But if you break one of the trips, something underneath will likely go wrong. We try to educate our operators to use all possible care with signals; we tried dropping an immense ball so as to call the attention of the operator to the fact that the crane was under repair. But if a crane-operator is a good one, he is attending to his own work; so we cannot lay too much stress on the human equation.

(Conference proceedings to be continued in next issue of the Bulletin.)

Vol. 2 No. 6

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

JUNE, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; Otto T. Mallory, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; also by W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Division.

The Chief of the Bureau of Statistics and Information is Paul N. Furman, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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The Department of Labor and Industry announces with sorrow and regret the death on June 12th, 1915, of George S. Comstock. The following tribute to his memory has been written by Mrs. Samuel Semple, a fellow member of the Industrial Board.

(Courtesy Journal Engineers' Society of Penna.)

GEORGE S. COMSTOCK.
July 10, 1850—June 12, 1915.

GEORGE S. COMSTOCK.

In the Act by which the Legislature of 1913 created the Industrial Board as a part of the Department of Labor and Industry, there are, with one exception, general instructions as to the persons who shall make up that Board. That one exception, the fifth member of the Board, has generally been spoken of as "the representative of the general public." When, on February 4th, 1914, the Board met for organization, that fifth member, appointed (as were the others) by Governor Tener, was found to be Mr. George S. Comstock, of Mechanicsburg. The other members of the Board saw in him a gentleman somewhat past the meridian of life, of medium stature, possessed of a kindly countenance lighted by keen, clear eyes, and distinguished by a polished, courteous manner. They also could not avoid recognition of the fact that he was in frail health. Continued acquaintance during the work of the Board for the next sixteen months emphasized the first impression of kindly courtesy, and showed it to be founded on that broad toleration which results from a clear perception of persons and events. The one exception to this spirit of toleration that showed itself persistently, was toward slipshod or dishonest methods in either the general tenor, or the details, of business.

Mr. Comstock had been a manufacturer in the iron trade, and was therefore aware of the problems in the managerial side of business; but his business had been of such a size that it had evidently kept him in most human touch with his employees, and he was never for a moment oblivious to the claims of the laborer to justice and consideration. The variety also of his business experience had given him a touch with the diversified industries of the State, and enabled him to give specially illuminating points of view on many of the subjects that came before the Board. In addition to his general knowledge of business conditions in the State, perhaps because of it, Mr. Comstock held a brief for no man, and for no class. His open-mindedness, and his desire to get at all the facts in the case, were the distinguishing marks of his part in the hearings held by the Industrial Board. His tact in putting such questions was unfailing.

Mr. Comstock's service in helping to arrange safety regulations for the industries of the State was great. He was a member of the special committees which worked out ten of the eleven safety standards already issued by the Industrial Board. Besides this he devoted himself specially from the start to the office organization of

the work of the Board. He supervised the installation of the system of filing records, and devoted much time to the careful detail work required for this. He even took up his residence in Harrisburg during the winter months in order to be nearer the Capitol, and more closely in touch with the work of the Department. He was enthusiastic in his belief in the work of the Department of Labor and Industry, and was wont to say that it was one of the busiest state departments that he had even seen in any state. Of the humanitarian and altruistic value of the work of the Department and of the Industrial Board, he was very sure. It was this that supported his enthusiasm through his own increasing ill health and suffering—for it could not be ignored that this courteous and cultured gentleman was a constant sufferer. A few meetings of the Board he was obliged to miss by reason of acute illness; to others he came direct from the hands of a medical attendant; from others he retired of necessity directly to his bed. In spite of this partial invalidism, he was wholly devoted to his work, and deserves to be ranked with the devotees of that new patriotism which believes that love for one's State is best shown in painstaking service of the public.

SHORT HOURS—AN AID TO EFFICIENCY.

Until recent years, it has been considered that the longer the number of working hours per day, the larger the output—regardless entirely of the fact that human energy does not work with perfect uniformity, but involuntarily slackens and stops and starts up again. In spite of all efforts of the will, the human body does not work with regularity. To ignore this physiological fact and to force the body to an unnatural tension and prolonged periods of work, only lose out in the end; for while they may produce greater results in the beginning, they very quickly lead to a state of complete exhaustion that is very difficult to recover from. The best results are obtained from keeping well within the limit of fatigue. Then the worker can accomplish his tasks with greater uniformity, having regular periods of rest after reasonable hours of labor.

The following description of the methods of one industry, and the results obtain by shortening the number of working hours, show clearly that there is no loss from such a shortening.

Mr. Charles C. Krouse of the Williamsport Staple Company writes as follows:

"In our industry—manufacture of leather goods—in which we normally employ one hundred and fifty women and one hundred and fifty men, we had fully and finally determined that we could produce as much in volume with the same number of people, working fifty-two hours a week, as we could when working sixty hours a week. I do not believe the same results could be obtained in all classes of industries but I do believe that the same results would obtain in most industries where production in volume is largely determined by the speed of the operators. My observation has been that top speed cannot be maintained ten hours a day and six days in a week, and that the fatigue of the operators is as much a determining factor in production as the number of hours.

For about ten years our factories have been operated fifty-two hours a week:

Five days,—6:50 A. M. to 12 M.—12:50 P. M. to 5 P. M.

Saturdays,—6:50 A. M. to 12:10 P. M.

Ten years ago we made a series of tests, by working about two months at sixty hours a week, then working about two months at fifty-two hours a week, alternating in that way for the best part of a year. We found that production was somewhat larger the first two weeks of a two months period working sixty hours a week, than

two weeks on fifty-two hour basis, but decreased during the latter part of the two months period on the sixty hour basis. Our reasoning was that operators were not fatigued when working on the fifty-two hour basis, and they maintained nearly the same speed during the first two weeks on a sixty hour basis, but each week thereafter lost in speed because of fatigue. Our records demonstrated that production on a fifty-two hour weekly basis, for a considerable period was practically the same as production on a sixty hour weekly basis during a similar period. Therefore, we permanently adopted a fifty-two hour week, as stated, about ten years ago."

It may be that other industries would find that they could follow the example of the Williamsport Staple Company, with no loss in production, and with an immense gain in the contentment and efficiency of their employees.

SEVERAL OCCUPATIONAL DISEASES.

Workers in lead plants, painters, tinners and those engaged in soldering work, workers in potteries, file and porcelain enamel ware factories, sand paperers of painted surfaces and printers are all subject to lead poisoning. Statistics are hard to obtain but it might be interesting to mention that in the State of Illinois, in three years, there were 578 cases of lead poisoning reported and in New York State there were 60 deaths reported from this cause alone in a period of two years (1909 and 1910).

Lead generally enters into the body slowly in minute particles. The workman first has indigestion and "Painter's colic." Gradually, it may lead to disease of the heart, blood vessels and kidneys, and in many cases, if no preventive measures are followed, to paralysis and premature old age. Men between forty and fifty years of age affected by this disease have all appearances of being eighty or over. It is also worth noting that lead poisoning has harmful effects on the wife and offspring of those afflicted with the disease.

It may be asked how lead poisoning can be avoided. The remedy is quite simple. Wherever lead dust is created, it should be removed at the source of origin by means of a suitable ventilating or exhaust system. Workmen in lead and its compounds should never eat in the workrooms or chew tobacco, because sooner or later they will take into their systems, together with the food or saliva, a sufficient quan-

tity of lead to cause trouble. They should also wash their hands repeatedly, especially before eating, and bathe in hot water several times a week.

Another disease which is found to be widely distributed, is Brass Founders' Ague. This is caused by zinc entering into the body in the form of zinc oxide either by the inhalation of dust or by being swallowed with food or saliva. We find this disease prevalent in brass founderies, zinc smelters and oxide factories, where proper means are not used to protect the workmen from this kind of dust.

In pouring brass, the fumes which contain a large proportion of zinc oxide are inhaled and in a short time the worker begins to feel exhausted. After a few hours, chills and shivering fits accompanied by headache, nausea and muscular pains set in and may continue for an hour or two. Some workmen are very susceptible to this, while others seem to be immune. The obvious remedy for susceptible persons is to engage in other occupations. Continued attacks may eventually lead to serious anaemia.

A large number of zinc works have practically eliminated this disease from among their workmen by installing proper ventilating systems and providing workmen with respirators where the systems are not practicable. There is no question that this disease is preventable and so employers, as a rule, are installing systems and apparatus which will protect their employees from this distressing and exhausting condition.

Another chemical which causes a great deal of discomfort to workmen who come in contact with it, is wood alcohol. Varnishers are often subjected to the fumes of this liquid, and as constant working in the fumes will mean impaired vision and possible total blindness, it is one of the most dangerous chemicals with which a painter has to deal. The fumes cause headaches, ringing in the ears, difficult breathing, nausea, and a mist or veil before the eyes which in severe cases may eventually lead to complete blindness.

Workmen who have to use this article should work only where there is thorough ventilation. It has been found advisable, however, to substitute denatured alcohol for wood alcohol and in this way avoid all possible danger. At the present time, wood alcohol is found only in places where a few cents extra cost is considered of more importance than the health of the workmen employed.

MATTRESS LAW PROTECTS THE PUBLIC.

Department of Labor and Industry urges purchasers of mattresses to examine the label. The Law eliminates danger of spreading of disease by the sale of second-hand mattresses.

The amendments to the Mattress Act of 1913, which were passed by the last Legislature and approved by Governor Brumbaugh on the 14th day of May, 1915, have altered the law in some provisions in which the meaning was not sufficiently clear in the original act.

The law was enacted to protect the public from the danger of contracting diseases by the use of insanitary and unhealthful material in the manufacture of mattresses. It was also enacted to prevent the promiscuous buying and selling of second-hand mattresses which may or may not have been used by persons suffering from contagious diseases.

Too often it had been found that many mattresses which had been taken from hospitals or other institutions where sick persons had been treated, were being sold without any thought being given as to whether or not they were a menace to the health of the new purchaser. The chief offenders in this case were second-hand dealers. Such mattresses would manifestly be a menace to the health of any community where the practice was tolerated. It was also common knowledge that the material from this same type of second-hand mattresses was often used in the manufacture of new mattresses.

The Law as originally passed by the Legislature had its provisions so made to prevent the practices stated above. After two years experience in the enforcement of this Law, it was found advisable to have certain changes made which would not only assist in its enforcement but would also make some of its provisions more clear. Accordingly amendments were enacted at the recent Session of the Legislature which provide among other things the following:

The absolute prohibition of the use of any material which might contain germs of disease.

The prohibition of the use of any second-hand material unless same has been sterilized by a process approved by the State Commissioner of Health.

The necessity of every mattress being properly labeled.

In order that a mattress may be sold legally in the State at the present time, it is necessary that a label at least 3x4½ inches in size shall be attached to each mattress. This label shall state the materials used in filling the mattress, the names and addresses of the

manufacturer and the vendor of the same and also the fact that the mattress has been made in compliance with the Act of Assembly of Pennsylvania, approved the first day of May, 1913, as amended.

If the mattress which is being sold is a second-hand one, in addition to the above information, the label shall also state that the mattress is "Second-hand," together with the date of sterilization and disinfection, and the name and address of the person or corporation sterilizing or disinfecting the same.

The Department asks the co-operation of the public in seeing that the provisions of this Law are enforced and would recommend that any person purchasing a mattress should ascertain whether a label giving the proper information is attached to these articles. In this way all purchasers will protect themselves from unscrupulous manufacturers who might otherwise sell them mattresses which would be detrimental to their health.

Copies of the Law as amended can be obtained by addressing the Department of Labor and Industry, Harrisburg, Pa.

ACCIDENTS REPORTED DURING MAY, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Total.	Serious.	Minor.	Total.	Serious.	Minor.		
Nursery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Building trades,	.....	5	10	8	8	6	7	3	4	37	.....	.....	.....	44	.....
Chemicals,	9	13	10	21	14	12	10	4	2	83	.....	.....	.....	89	.....
Clay-Glass,	6	15	21	15	15	18	19	3	3	103	.....	.....	.....	109	.....
Clothing,	.....	1	1	3	.....	1	2	.....	.....	8	.....	.....	.....	8	.....
Food products,	.....	2	1	4	6	3	3	1	1	16	.....	.....	1	19	.....
Leather,	1	3	2	2	3	2	3	.....	.....	16	.....	.....	.....	16	.....
Liquors,	.....	.....	1	.....	1	.....	.....	.....	.....	2	.....	.....	.....	2	.....
Lumber,	.....	2	6	6	5	5	3	1	1	25	.....	.....	.....	27	.....
Paper,	.....	4	4	2	4	4	4	.....	2	19	.....	.....	1	22	.....
Printing,	.....	.....	1	1	.....	2	1	.....	.....	5	.....	.....	.....	5	.....
Textiles,	.....	9	2	5	8	6	4	.....	3	30	.....	.....	1	34	.....
Miscellaneous,	.....	2	3	3	4	7	3	.....	.....	22	.....	.....	.....	22	.....
Laundries,	.....	.....	1	1	.....	1	.....	.....	.....	2	.....	.....	1	3	.....
Metals,	56	280	264	286	299	277	198	12	117	1,531	.....	.....	.....	1,660	.....
Mines,	26	300	295	245	245	273	280	100	186	1,378	.....	.....	.....	1,664	.....
Public service,	42	250	218	210	227	191	138	7	94	1,175	.....	.....	.....	1,276	.....
Tobacco,	.....	.....	.....	.....	1	.....	1	.....	1	1	.....	.....	.....	2	.....
Unclassified,	.....	3	2	.....	.....	.....	1	.....	.....	6	.....	.....	.....	6	.....
Total,	140	889	842	812	840	808	677	121	414	4,459	.....	.....	4	5,008	5,008

ACCIDENTS REPORTED DURING JUNE, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Total.	Serious.	Minor.	Total.	Serious.	Minor.		
Nursery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Building trades,	.....	6	4	7	7	9	6	2	4	33	.....	.....	.....	39	.....
Chemicals,	3	11	18	8	13	19	10	1	6	75	.....	.....	.....	82	.....
Clay-Glass,	4	10	11	16	11	15	14	1	3	77	.....	.....	.....	81	.....
Clothing,	.....	2	2	.....	1	.....	1	.....	.....	6	.....	.....	.....	6	.....
Food products,	1	4	5	8	6	8	6	.....	2	36	.....	.....	.....	38	.....
Leather,	2	3	10	2	1	7	3	.....	2	26	.....	.....	.....	28	.....
Liquors,	.....	.....	3	3	1	1	1	1	.....	8	.....	.....	.....	9	.....
Lumber,	.....	4	5	3	7	3	5	.....	.....	27	.....	.....	.....	27	.....
Paper,	.....	4	5	4	7	5	6	.....	.....	31	.....	.....	.....	31	.....
Printing,	.....	1	.....	1	1	.....	1	.....	1	3	.....	.....	.....	4	.....
Textiles,	.....	3	6	6	11	8	2	.....	1	35	.....	.....	.....	36	.....
Miscellaneous,	.....	8	10	4	6	4	1	2	.....	31	.....	.....	.....	33	.....
Laundries,	.....	1	.....	1	2	1	.....	.....	2	2	.....	.....	1	5	.....
Metals,	75	296	268	298	282	248	177	9	102	1,532	.....	1	.....	1,644	.....
Mines,	15	184	199	202	171	212	177	62	106	992	.....	.....	.....	1,160	.....
Public service,	45	185	230	222	242	193	145	2	81	1,179	.....	.....	.....	1,262	.....
Tobacco,	.....	.....	2	.....	.....	1	.....	.....	1	2	.....	.....	.....	3	.....
Unclassified,	.....	2	3	3	1	2	1	.....	.....	12	.....	.....	.....	12	.....
Total,	145	724	781	788	770	736	556	80	311	4,107	.....	1	1	4,500	4,500

PROCEEDINGS OF THE SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY.

PART I.

TUESDAY, NOVEMBER 17th, 1914.

(Continued from May 1915 Bulletin).

SAFETY SECTION—Continued.

Carl Hansen, Secretary of Workmen's Compensation Service Bureau, Chairman.

THE CHAIRMAN: We shall listen to Mr. W. P. Eales, Supervising Inspector of the Travelers' Insurance Company, who will speak on Motion Theatre Standards.

MOTION PICTURE THEATRE STANDARDS.

W. P. Eales, Supervising Inspector, Travelers' Insurance Co.:

While the motion picture business was still in the experimental stage, promoters were uncertain as to the profits that might be expected and were, therefore, unwilling to risk large sums of money. Many theatres were erected hastily and cheaply, and many buildings, entirely unfit for the purpose, were utilized.

Safety should be the first consideration of builders and owners of motion picture theatres. It should also be required that local authorities prohibit the exhibition of motion pictures in halls, lodges, and churches, where pictures are shown occasionally, unless such buildings or places are as safe in every way, as the full-time theatre. Here is where the real hazard exists as experience has demonstrated.

Fireproof or fire resisting material should be used throughout, in the construction and ornamentation. Concrete is best for floors and partitions for sanitary reasons, if for no other. Door and window frames should be of incombustible material. If windows are used in partitions, they should be made of wired glass not less than $\frac{1}{4}$ inch thick.

Mirrors are often placed along walls of lobbies and corridors. These create an additional menace, and should be omitted or re-

moved. Mirrors that give the appearance of exits are especially objectionable, and there should be no false doors or windows, nor other architectual devices in lobbies, passageways or elsewhere that might lead persons to believe there are exits where none exist.

Guard rails should be installed along the edges of the balcony directly over the auditorium. The tops of these rails should be not less than 3½ feet above the floor level at the front of the balcony. The railing should be constructed of 2″ metal pipe or its equal, and supported at intervals not exceeding ten feet.

The balcony roof or ceiling should be supported by trusses or plate girders, eliminating the necessity of posts, columns and stanchions that obstruct the view of the patrons.

Ample ventilation is essential, and this feature should receive careful consideration. The distribution of air throughout the house should be uniform, without causing drafts. The change of air in theatres of this kind is usually effected by fans which force fresh air into the building through conduits. Twenty-five cubic feet of fresh air per minute for every person present is good; forty feet is better in order to keep the air in a satisfactory state of purity. The blowers or fans should be controlled from the picture machine booth, and further provision should be made for automatic stoppage of the blowers in the event of fire. Air circulating fans, if any be provided, should be not less than 7½ feet above the floor level, and should be guarded by wire screens.

The floor inside of the main entrance should be on a level with the street sidewalk whenever possible; in no case should it exceed an elevation of six feet. When the number of seats in the balcony exceeds 200, there should be at least two entrances to such balcony, each not less than 5 feet wide. The number of exits is influenced by the seating capacity of the theatre. In every case, however, there should be not less than two exits leading from the main floor into open streets or avenues, through each of the side walls. Every exit should be not less than 60″ wide. All doors should swing outward, and be so constructed that when open, they will not obstruct any portion of any doorway, opening or passageway.

During the exhibition, all exit doors should be unlocked, so that they may be opened by exerting a slight pressure only.

All exit doors should be marked plainly, and illuminated signs should be provided over the door openings. Five inch lettering is commonly accepted as the minimum size. Where emergency exits and stairways are located inside the walls of the theatre, they should be separated from the auditorium by a fireproof partition not less than 4 inches thick. A theatre located between other buildings, should have an external passageway on each side extending to the street. If the theatre abuts on a street at both front and rear, these

passageways should be not less than 6 feet wide throughout their entire length, and their sides should be parallel. It is also advisable to cover them over to a height of 8 feet with brick or with some fire resisting material. Entrances to stores, offices, etc., should be separate, and distinct from those of the theatre. The passageways from exits to streets should be smooth, unobstructed and well lighted. All stairways that extend to court or street grades should be independent of one another.

All stairs should be provided with substantial hand rails, and when the stairs are built between walls, the railings should be firmly secured to the walls and stand out 3 inches from them. The height of railings should be 3 feet above the treads. Stairs more than 7 feet wide should have a substantial center rail in addition to the side railings. All stair treads, aisles and passageways should be covered with some abrasive or non-slipping material.

The slope of the auditorium floor should be sufficient to permit persons at the rear to see the stage or screen over the heads of those sitting in front, but it should not be unnecessarily steep. A grade of 10% is sufficient, and when this standard is adopted, it will be unnecessary to place steps.

In boxes accommodating not more than 15 persons, it is usually unnecessary to have seats fastened to the floor. In the auditorium and in all other parts of the theatre, the seats should be fastened to the floor by suitable castings, each secured by at least 3 screws. Loose seats should receive immediate attention. The distance between the rows of seats should be 32″ from back to back, and the width of each seat is 18″. This will give ample room for the passage in and out, and will also insure comfort to the patrons during the exhibition.

The seats should be arranged where practicable so that the aisles lead direct to exists. Cross aisles should be provided in the auditorium, dividing the seats into blocks of 15 rows each, and in balconies a cross aisle should be provided to every 9 rows of seats.

Steam or hot water radiators, when placed along the side aisles, should be recessed into the walls so as not to obstruct the passageways. Carpets and other floor covering should be firmly fastened, special care being taken not to allow the edges to roll or turn up, and to repair torn or badly worn places promptly.

The indirect system of lighting is well adapted for motion picture theatres, as it gives a soft diffused glow which can be nicely regulated. A glossy white finish will reflect the most light, but a slight creamy tint makes the illumination more pleasing to the eye.

There should be side wall and ceiling lights along the side aisles giving sufficient diffused light to enable the ushers to show persons to their seats without difficulty during the display of a picture. The

red lights located over each exit door should be kept burning contiuously during the performance.

The electric current for lighting the theatre, and for operating the moving picture equipment should be obtained, when possible, from two separate street mains. One service should be of sufficient capacity to supply current for the entire installation and its accessories, while the other supply should be sufficient for all emergency lights including the exit lights, and the lights in the corridors, lobbies and other portions of the theatre which are usually illuminated during the exhibition of pictures. In locations where only one supply can be had from the street mains, the emergency light circuit should be connected at a point beyond the main service fuses, thus insuring adequate lighting at all times. To guard against failure of the electric current outside of the theatre, it is advisable to provide a storage battery with an automatic switch.

When theatres have their own generators, storage batteries are also advisable to operate the emergency lights in case of trouble with the generators. This method is frequently adopted in small towns where the public facilities are limited.

The service switches should be of the three way type, so that for occasional convenience and for emergency use, they may be operated from the booth as well as from some suitable point in the corridor or elsewhere. The switch boxes should be enclosed, and should be constructed of incombustible material. The fuses should be of the enclosed type throughout the entire building, all the wiring and electrical apparatus should be effectively insulated and the entire electrical equipment should be maintained in good condition in every respect.

When motion picture machines first came into use, they were not enclosed unless possibly by structures of canvas, cloth or wood. The necessity for enclosing the machines in fireproof booths of some kind became universally recognized, however, after a number of fires had been caused by the ignition of the highly inflammable films, and laws were then enacted requiring such enclosures. Some of the requirements of the early laws were not entirely practical, and they have since been revised and amended quite materially.

The booths should be constructed so that they will not only confine possible fires within them, but also keep persons in the audience in ignorance of any such fires, and thus diminish the chance of panic. Incombustible material should be used, such as asbestos, cement, tile or brick in preference to metal, because the last mentioned material may become grounded and cause short circuits, thus starting fires which would otherwise be avoided.

The location of the booth depends in a large measure upon the projecting power of the machine that is to be used, and may, therefore, vary from 75 to 150 feet. Whenever conditions will permit, it is advisable to locate the booth at a point remote from an entrance or exit.

It is also desirable to locate the booth as near as possible to the roof of the theatre, and it may even project above the roof.

Booths should be not less than 7 feet high, and the floor dimensions should be 6 x 8 feet when only one machine is used, or 9 x 8 feet for duplicate machines.

The lense openings and the operator's look-out port should be provided with fire shutters, held open by fuse links having a low melting point so that they will close quickly if fire breaks out in the booth. The shelves in the booth and the rewinding bench should be made of asbestos, and the films kept in metal containers.

The booth should be ventilated by a pipe 6″ to 10″ diameter, extending through the roof for a distance of 2 feet. This vent pipe should be fire-proof. A chemical fire extinguisher should be located within the booth, and another one placed just outside. The door of the booth should be self-closing. Where steam is available, a ¾-inch steam pipe opening inside the booth controlled by a globe valve on the outside, is the most efficient fire extinguisher for a picture machine booth.

The auditorium should never be entirely dark. Local ordinances usually require a low degree of diffused illumination because a person entering a dimly lighted room from a brilliantly lighted street cannot see distinctly until the eyes have become accustomed to the new conditions. It is also recommended that a sign be posted at the entrance requesting patrons to stand at the rear of the audience for a few moments before going to their seats, so that their eyes may become accustomed to the faint light. This helps to avoid accidents from stumbling, and from colliding with fixed objects or with other persons.

However rigid the requirements may be in regard to the proper protection of the public, many accidents resulting in fires and panics may occur if competent operators are not employed. The patrons of the theatre must rely upon the competence and good judgment of the operator for their safety. All operators should be required to pass a practical examination to test their ability and knowledge of electricity.

All employees should be thoroughly instructed with regard to their duties before they begin work. They should also learn the locations and methods of manipulating the extinguishers, hose connections and fire alarms, and they should become familiar with all of the emergency

exits and protective devices throughout the building. Instruction should be given as to the best methods of dismissing audiences in case of fire or impending panic, so that the theatre may be emptied quickly and in an orderly manner.

Compliance with these recommendations which I have presented to you will prevent loss and waste both to the owners and to the public.

DISCUSSION.

Mr. George I. Rudolph, Inspector, Department of Labor and Industry:

Acts No. 233 and 206 seem to have gotten mixed up very badly, and by the paper the gentleman has just read it seems as if we propose to amend one law by substituting a law referring to a different subject. I think the laws regulating motion picture shows should be kept separate from the theatre laws. Act No. 233 calls for three four-foot aisles. You will find plenty of safe nickelodeons built on eighteen foot lots. Now in the paper just read, I say that Acts No. 233 and 206 are mixed. Have Act No. 206 amended in the way you wish, and allow Act No. 233 to relate to theatres. There are forty-two nickelodeons in my district and I do not think there is one that it would take more than two minutes to empty. I consider them all safe houses, but they are not built according to the plan in this paper.

Mr. H. H. Cannon, Engineer, Workman's Compensation Service Bureau, New York:

There are one or two points that I think might well be brought out. Mr. Eales mentioned having red lights burning at the exits during the entire performance. Our bureau has taken the stand that red usually means danger, and therefore we should not hang a red light over a safety exit, but the lights should be green, and we are hoping to have that adopted for all industries. Instead of having safeguards painted red, they should be painted green. Another point is the dismissing of audiences. It would facilitate the start of the following performance if the audience were dismissed from the emergency exits. It also educates people to use them. There have been one or two disasters in which the audience all tried to pile out of the main entrance. It was the only passageway they

had ever used. Whereas, if they had used the emergency exits, the disasters probably would not have occurred.

THE CHAIRMAN: The ideas offered by Mr. Cannon I think are pertinent ones, especially the one in reference to light. If we are to be consistent in our safety propaganda, we must be logical ourselves; or how can we expect people to listen to us? And to use the same color to indicate danger and safety is the height of illogic. I should like to hear a discussion as to the possibility or probability of having it fixed by statute law that all exit signs in all public buildings shall be white letters on a green field, rather than white letters on a red field. Mr. Eales, can you give us something on that?

MR. EALES: Yes, sir; your argument is logical. Only we are breaking away from an old, time-honored custom. I don't know but the time is as good now as any other time.

MR. CANNON: I have nothing but commendation for that paper, and one thing I commend very highly, and that is where it states that operators should be used to their work. I find in Philadelphia that you can't operate a machine unless you are put through examinations showing that you are qualified. The great danger, as it has been said, is through incompetent operators. We have in Philadelphia very few accidents; because we have competent operators, who have to take an examination before getting positions and they are men. That should be made a State law or a city ordinance.

THE CHAIRMAN: I am sure that we all appreciate how necessary it is for a man performing any duty, to understand the duty he is supposed to perform, and I think further discussion on that would be a benefit to all of us.

Mr. George W. Nape, Inspector, Department of Labor and Industry:

In regard to lights they could be changed to green, for that means a safe way out; but the red on dangerous machinery should not be changed to green. A green color will become black in a very short time, while a red may be wiped off, and it will always stay red, and it is a real sign. But I think the change in the lights on the exits of nickelettes, theatres and factories from red to green is good, because it is meant to show a safe way out.

THE CHAIRMAN: If you will pardon the Chairman for taking issue, or taking part in this discussion, I shall show the gentleman that he is wrong. It is not the guard that should be shown in red color, but the object guarded; so that immediately when the guard is removed, the red is shown. Instead of painting the guard over a gear, red; the gear itself should be made red, so that the red color would immediately indicate to the operator or surrounding workmen

that there was danger. As soon as the guard is in place there is no danger, and I think it is a case of logic again.

MR. EALES: I shall accept that, and anybody will, but how will you keep it red on a greasy gear?

THE CHAIRMAN: Let us hear from somebody else, especially in relation to motion picture theatres, which is the subject under discussion.

Mr. William B. Shoe, Chief Safety Engineer, of the Ocean Accident and Guarantee Corporation, Ltd., New York City:

I am just going to raise a question at this time as to what should be considered an adequate form of light maintained, while the picture is shown on the screen. In different localities we find different standards as to how much light there should be in the hall in which the pictures are shown, and it is really a very important consideration in the motion picture theatres. People come and go while the picture is on. Now, in my opinion, we should arrive at something which could be used as a standard, so that a person would know whether the hall was properly lighted. I believe you all agree in the thought that there must be some light maintained in the hall.

THE CHAIRMAN: Has anybody anything else to suggest? The Department of Labor and Industry is open to suggestions.

MRS. REDKLING: In my work I find a few motion picture theatres, which use a slide on the screen designating the exits. One in particular I felt was very good; something like this: "Wherever there is a red light in this house, there is an exit. In case of emergency"—they avoid the word "fire," which might cause a panic—"go to the one nearest to you. Move out quietly in your turn. Don't push. Don't crowd." I should like to know what you would do in halls that are used only once in a while. You can't have them fasten the seats. The hall may be used as a dance-hall the next day.

THE CHAIRMAN: Can any one offer any suggestions?

Mr. R. D. Center, Mechanical Engineer, Atlas Portland Cement Company:

I haven't any suggestions to offer on the point that was just brought out relative to the permanency of seats. I was called out a few minutes ago. I had intended to make some remarks on the general paper in connection with the motion picture houses, and object to the paper on the matter of stairways. I think that all of us who have attended these houses and gone up and down stairs in crowds, have felt more or less like an amateur bicycle-rider. The stairway might be a number of feet wide; and we would lose our balance, and have nothing to steady ourselves with but our neighbor. I

think we ought to drive home the importance of having intermediate handrails. The modern tendency of audiences seems to be more or less panicky, and this fact should add weight to the importance of having such handrails. They don't interfere with the passage. They would not take up more than three or four inches, and would not have a tendency to trip anybody. It will certainly help where large crowds have to pass down a stairway in a hurry.

THE CHAIRMAN: May we have some constructive suggestions as to what should be the requirements for handrails on stairs in motion picture theatres?

MR. CANNON: I think Mr. Eales discussed the question of railings, and he said that where the stairway was seven feet or more in width, there should be an intermediate railing. If we get below seven feet, we have only three feet between the rails, and Mr. Porter, of New York, consulting engineer, has demonstrated conclusively that a crowd can jam if it has less than about forty-two inches, so that decreasing the size of any one passageway would increase the danger of jamming.

THE CHAIRMAN: You suggest stairways eight feet or more?

MR. CANNON: I favor eight rather than seven.

THE CHAIRMAN: What is the concensus of opinion? Let us have more opinions as to whether seven or eight feet should be the width upon which an intermediate railing would be needed.

MR. CENTER: Seven feet ought to be the maximum. I should almost say six feet. A person stumbles and falls forward slightly. If there is a rail in the middle of the passageway, the chances are that he will grasp that as he falls forward. With nothing to grasp, there is absolutely no chance for recovering his balance.

THE CHAIRMAN: Don't you think there is something in Mr. Porter's contention that there is danger of crowding in any space less than four feet?

MR. CENTER: I don't see how that would be seriously affected by the hand-railing. At most, the rail might be three-inch pipe, and smooth along the sides, so that I don't see that it need obstruct the passage.

MR. EALES: I put the space six feet. While eight feet might be well for adults, it is certainly too much for children. Seven feet is a better proportion for adults than four feet would be for children. I think one and one-half inch iron should be used.

THE CHAIRMAN: That would leave us three feet and a quarter in the clear?

MR. EALES: Yes.

MR. CANNON: We should strive to eliminate stairways in motion-picture houses. I think that is really the crux of the situation.

THE CHAIRMAN: What would you suggest in place of them? Would you eliminate balconies?

MR. CANNON: It is suggested that six feet be the maximum height for one run and that the pitch of each run be such that it would not be too precipitous.

THE CHAIRMAN: Incidentally, that is a subject which we are considering.

MR. EALES: I think I said in my paper that I would do away with stairs in new constructions. But we must not impose hardship on the owner of an existing theatre. In an existing theatre, you could not put in a slope. The tendency is to make them as safe as we can under existing conditions. I think there should be a slope exit from a balcony.

THE CHAIRMAN: I think Mr. Eales' point is a pertinent one. We can't impose hardships on owners of motion-picture houses. But the idea of introducing the protected stairways in new constructions should have the serious consideration of every State Legislature.

MR. CANNON: On the other hand, the Strand Theatre in New York has stairways, and I would hesitate to say that it is dangerous. There are many motion-picture theatres with stairways far more dangerous. I do not see how we can distinguish between a theatre of that kind and the ordinary theatre used for other kinds of plays, and especially in vaudeville theatres where motion pictures are sometimes shown.

Mr. John Monteith, Representative, Insulators and Asbestos Workers, Local No. 14:

If the people become excited, and make a rush for the stairs,—whether there be a rail or not, someone is bound to fall, and one falling over another will make congestion and cause loss of life. Now the employees of different theatres have their fire-drills. I think a very good thing would be something in the form of lock turn-stiles, at the top of the stairs, so that in case of emergency, it would give the employees a chance to get them open and let the people out quietly instead of in confusion. I think that would prevent congestions.

THE CHAIRMAN: In other words, you call attention to the human equation. Is it not fundamental, however, that we must have the conditions proper before we can ever expect to teach human nature to be careful?

MR. MONTEITH: In regard to the necessity of having fire-proof materials in the operator's booth. If the booth is made of asbestos, an

asbestos shelter ready at all times to throw over and smother anything that catches fire, would be a very safe proposition. Also proper insulation should be on any steam lines that may run into the booth or around it.

THE CHAIRMAN: If there is no more discussion, I shall declare the meeting adjourned.

HYGIENE SECTION.

Tuesday, November 17th, 1914, 2:00 P. M.

Dr. Thomas Darlington, of the American Iron & Steel Institute, presided over the session and opened the meeting by calling attention to the fact that all men delegates registering during the morning would be given a card affording them the privileges of the Club House of the Engineers' Society of Pennsylvania to be procured at the registration booth at the House of Representatives.

REGULATIONS FOR BLOWERS AND EXHAUSTERS.

Mr. W. T. Doyle, Mechanical Engineer, New York State Department of Labor:

The primary reasons for this and similar conventions are the changes which have been passing over the legislative bodies of our States, relative to the exercise of the police power vested in the governments thereof. Only a few years ago such matters which here form the principal topics of discussion, were entirely ignored by legislative assemblies, and rarely thought of by employers or employees. It is not my purpose to delve into the reasons for the transition from the laissez faire policy to that of the present day, nor to attempt predictions, but merely to remind you that such movement is in progress, and to attempt its illustration in a specific direction, i. e.,

mechanical ventilation, as provided for by law and regulation in the State of New York.

Chapter 36 of the Laws of 1909, as amended by the Laws of 1914, is known as the Labor Law of the State. It provides for the creation of a Department of Labor, the head of which shall be the Commissioner of Labor, in whose hands are placed the power and responsibility of the enforcement of the Labor Law. So far as the subject in hand is concerned, there are several paragraphs which specifically deal with ventilation, requiring that proper degrees of temperature and humidity be maintained either by natural or mechanical means, and that suction devices be provided wherever dust, gases, fumes, fibres or other impurities are generated or released.

The Labor Law also provides for an Industrial Board, consisting of the Commissioner of Labor and four associate members. The Board, so organized, is empowered to "make, alter, amend and repeal all rules and regulations" for carrying into effect the provisions of the law.

The rules and regulations adopted by the Industrial Board constitute what is known as the Industrial Code, and embrace all matters and subjects co extensive with the power and authority vested in the Department by the Labor Law.

The Industrial Board, in arranging its program, has divided its work under eight heads—Fire Hazards,—Ventilation and Lighting,—Sanitation, and Comfort, — Dangerous Machinery, — Dangerous Trades and Processes,—Bakeries and Confectioneries,—Foundries,—Mines, Tunnels and Quarries. Eight committees have been appointed, each composed of employers, employees and disinterested experts in the occupations and trades to be affected by the regulations advocated by the particular committee. Each associate member of the Board is chairman of two of these committees. Committeemen serve without compensation.

The powers of these committees is limited to recommending the adoption of rules and regulations in their particular spheres. The Board then reviews these recommendations at public hearings, adopts what it judges to be reasonable and adequate, and issues its regulations accordingly. More detailed information concerning the Board and its work may be had from a pamphlet entitled "The Industrial Board."

The framing of regulations relative to mechanical ventilation has been limited thus far to the establishment of standards for the construction and operation of exhaust systems for grinding, polishing and buffing wheels, and these rules are printed in pamphlet form for distribution. It must not be inferred that the Department has required the installation of exhaust and blower systems in the grind-

ing and polishing trades only. On the contrary, the requirements have extended impartially to all activities in which gas, dust or fumes are generated or fibres scattered, as provided for in the law itself. Pending the adoption of regulations by the Industrial Board relative to other industries, the Division of Industrial Hygiene, referred to later, is charged with the duty of establishing suitable standards for ventilating systems.

The framing of a set of rules governing the means of removing waste products is frought with many difficulties. It must provide for adequate facilities, but not lean to the elaborate. Ambiguities must be avoided. Conflicts in the specifications of the constituent parts of the system must be guarded against, and at all times it must be borne in mind that the rules adopted are subject to interpretation by a village tinsmith more frequently than by an engineer. Not every owner affected by the regulations will obtain expert advice as to design, and with a set of rules sufficiently definite, such advice in the majority of cases will be unnecessary. Definite rules are also advantageous in the testing of systems by Department inspectors in that they remove the element of the personal equation which would otherwise operate, here, to the advantage of one owner, there, to be the disadvantage of another.

While all parts of a system must be properly proportioned, the most important part undoubtedly is the fan. It bears the same relation to the exhaust system that the heart bears to the body. It is the vital organ. It would seem therefore that the cardinal rules adopted should apply to design, construction and capacity of fan. Perhaps this might be desirable if only technical men were employed in exhaust system construction. But keeping in mind the fact that the majority of those affected by the rules will be non-technical men, it seems best to make the matter of the size of fan as simple of solution as possible. This has really been accomplished by indirection, in that the size of the fan, according to our specifications, is governed primarily by the size of inlet in the fan case. Dependence is placed on the companies manufacturing fans to design their products so that the sizes of all other parts of their fans are proportional to the size of inlet. A study of dimensions given in the catalogs of the various companies will show that the essential proportions of all fans except the Sirocco and Multivane Types bear a fixed relation and have done so for sixty years, following the experiments of Buckle and the proportions advocated by him. Therefore it follows that by specifying any one dimension of fan, a discharge capacity varying only between very narrow limits is assured. As the main suction pipe connects directly with the fan inlet, this was the logical dimension to specify.

Before the size of fan inlet is established however, it is necessary to find the requisite area of suction main. This in turn depends on the number and size of the branch pipes discharging into the main, and still working backwards, the sizes of the branches depend on the work to be accomplished on the machine from which the branches lead.

It would be possible no doubt, to develop some rational formula for branch sizes, based on specific gravity of material, size of particles, quantity to be handled in a given time and velocity of air flow. In the matter of formulae, it must be understood that there never was the intention of using them other than for the computation of sizes of pipe, the results of which would be used in the compilation of tables to be published for the guidance of those interested in the installation of systems. While experimental work has been carried on by all prominent manufacturers of fans, there are few firms engaged in the design and installation of systems who have made any attempt at experimentation on branch pipes, mains, etc. The development of the rules governing sizes has been of the cut-and-try order rather than by laboratory experiments. Nevertheless a schedule of practical sizes of branch pipe has been developed by all prominent firms, and these results agree with one another very closely. The schedule of sizes for the Industrial Code represents the average practice, leaning toward the higher individual figures as used in systems already constructed and which observation has shown satisfactory.

The minimum diameter of branch for any service is placed at 3″ and for most systems varies between 3″ and 8″, though in connection with large wood working machinery, run at high speed, branches of 10″ are used, and branches larger than this are frequently used in connection with the large hoods over kettles, furnaces and machinery for the removal of gases and the regulation of temperature.

The sizes of branch pipes prescribed in the Department pamphlet for grinding, polishing and buffing wheels vary between 3″ for wheels of 6″ diameter or less up to 6″ for abrasive wheels of 30″ in diameter and 6½″ for polishing wheels of that size. The maximum grinding or polishing surface of the wheel for a branch of a given diameter is also prescribed. The sizes of branch pipes as given in the table increase by half inches. Sizes of pipes for wood working machinery are more difficult to establish, but are generally based on the type of machine and only secondarily on its size.

The sizes of the branch pipes of a system having been determined, the main suction pipe is the next consideration. It is self evident that the main should be equal in area to the sum of the branch pipes. If the area of main be made less than the sum of the areas of the

branches, then when all the blast gates are open and all branches are feeding into the main, the velocities in the branches will be reduced proportionately to the ratio which the area of the main bears to the sum of the areas of the branches. The regulations of New York specify that the area of the main at any given point shall be 20% in excess of the sum of the areas of the branches between that point and the dead end of the mains. Several advantages are gained by this specification; the loss of head due to frictional resistances is reduced; an addition to the system can be made without changing the main, and the size of fan to be provided is able to care for such addition without undue speeding. These advantages are gained at a very trifling increase in cost.

This ratio between percentages of increased area and increased cost is practically constant; that is, an increase in area in the main of 20% will increase material in main about 8%.

The increase in size of fan due to this regulation will generally be to the next larger size of any given make. The corresponding percentage of increased cost is about 25%, amounting to $100 in fans of the larger sizes. With these sizes however, the advantage of lower power consumption will generally more than offset the increased first cost. There is still another advantage in specifying 20% excess in the suction main area, namely, the size of outlet of fan and discharge pipe to dust collector is likewise increased and in many systems such increase is necessary to diminish the back pressure which exists therein due to length or multiplicity of bends, or both, features frequently unavoidable in the location of the dust collector.

The dust collector of the system should be so designed that the air velocity within it will be sufficiently reduced to allow the suspended matter to settle to the bottom. The outlet from the collector must be large enough to allow for the escape of the air at the top at a velocity so low that the lightest dust is not carried away. The relative size of the outlet will therefore depend on the character of the refuse material, but should not be smaller than $2\frac{1}{2}$ times the area of the inlet. The matter of keeping the back pressure on the fan to a reasonable figure is largely influenced by the size of the dust collector and its outlet. While a system may be efficient with a back pressure in its discharge pipe of 2 or 3 inches, the owner of such a system is paying from 25 to 40 % more for power than he really should. It is evident therefore that liberality in collector dimensions is good policy.

There are several details of construction which are sufficiently important to deserve mention in any set of specifications. The first of these is the manner in which changes in direction of pipes are accomplished. All bends in pipes should be made with radii equal to

about two diameters of the pipe in question; with shorter radii, the frictional loss due to curvature increases rapidly, the loss for a 90 degree bend made by the intersection of two cylinders forming an elbow being about four times the loss sustained in a pipe bent to a radius of twice the diameter. There is no material gain in making the radius of bend greater than two diameters.

Branch pipes should lead out of the hood at the point where the dust will naturally be thrown by the machine. They should be made as short as possible and turned in the direction of the flow in the main so that they form with the main, at intersection, an angle of about 45 degrees on the upstream side. Angles greater than this have the effect of increasing the loss of head due to entry, and in intersections of 90 degrees, the friction loss would be about the same as for an elbow. Branches should enter the main on the top or sides, never at the bottom. Two branches should never enter the main opposite each other. Branches should never be allowed to project into the main, the intersections between branches and main being developed, cut, and the joint soldered.

Increases in size of main should be made with tapered sections, never abruptly. Handholes should be provided in main about 10 feet on centres to allow for periodic cleaning. Such handholes should be well constructed to prevent leakage.

All laps in piping should be made in the direction of air flow. Both the main suction and discharge pipes should be made as short and with as few bends as possible.

The design of hoods is of prime importance, especially in the grinding and polishing trades. It is important that the lower part of the hood be carried far enough forward so that the dust will not fall outside of it altogether. The principal objection to a large projecting underlip is that in grinding or polishing large pieces, the operator may inadvertently strike the lip with the piece on which he is working, with the possibility of injury to his hands, or the scratching of the piece by contact with the lip. Lips which are adjustable in length are in common use, but are of little service when large pieces are being worked, as they are then pushed back. In many cases this difficulty might be obviated by the substitution of a pliable substance, as leather, for the metallic lip. In the matter of hoods over kettles, furnaces, or machines giving off vapors or gases, a common objection is that they cannot be placed low enough to be efficient and at the same time not interefere with work done about them. Another common objection is made to their apparent inefficiency in a large number of instances. The latter condition, in the majority of instances is due to the area of the branch pipe being too small with respect to the size of hood. The proportion of area

of hood to area of branch should not be less than twenty to one. In cases where the first objection obtains, the hood may be raised to a convenient height, provided it is made longer and wider by six inches in both dimensions for every foot which it is so raised.

Many instances of inefficiency in caring for vapors and gases with hoods might be remedied by the installation of double hoods; that is, one hood inside the other, with an annular space of about one inch between them. The velocity maintained in this annular space would be several times greater than in an ordinary hood and would therefore suck in the gases which did not naturally rise before they escaped.

In the matter of velocities to be maintained in systems in order to hold the refuse material in suspension until it has passed through the fan, experiences in the streets on windy days prompt us to believe that a velocity of 65 miles an hour is at least sufficient to prevent any accumulation of dust and this velocity may be assumed as equally efficient when confined within the piping of an exhaust system. Reduced to feet per minute, it would be 5650, corresponding to a pressure of 1.15 ounces per sq. in., equivalent to 2″ of water. Our specifications for operating test of exhaust systems for grinding and polishing wheels call for 2″ difference in height of water columns in a U tube, the reading to be taken in branch pipes, within 12″ of the hoods. While no standard has been adopted for systems in wood working establishments, it is probable that a static suction at the hoods not much greater than 1″ will be required, save in instances where the quantity of refuse to be moved is extraordinary, and a suction not greater than ½″ will be required in exhaust systems for the removal of gases and vapors.

The administration of the law relative to the installation of exhaust systems is primarily in the hands of the factory inspectors assigned to the various districts into which the State is divided. Their judgment that a system is necessary is the basis for an order directed to the owner of the particular establishment to install one. From this order, the owner may appeal, and such appeal is referred for investigation and judgment to the Division of Industrial Hygiene. The personnel of this Division consists of one physician, one chemical engineer, one mechanical engineer, one civil engineer, and an expert in fire prevention, reporting directly to the Commissioner of Labor. After a decision by them that a system is necessary, the owner's neglect or refusal to install a system results in his prosecution, in which the merits of the case are judicially weighed. This last extremity is rarely reached however. With the order to install, there is sent the pamphlet containing Labor Department requirements and recommendations, taken from the Industrial Code. The

Code provides that a drawing of the proposed system be sent in duplicate to the Division of Industrial Hygiene for approval. The drawing is checked, criticized if necessary, and approved when it meets the Code requirements, subject to the operating tests prescribed. These are made by the regular factory inspectors. For this inspection and test the inspector uses a data blank consisting of a series of questions covering the structural details of the component parts of the system and his answers thereto will readily show whether the construction is in accordance with the drawings previously approved. The operating tests consist of ascertaining the revolutions per minute made by the fan by means of a speed indicator and the determination of the static suction at specified points in branch pipes, main suction duct and discharge pipe by means of the U tube. These blanks are submitted to the Division of Industrial Hygiene for review, and when approved, a dismissal of the original order is issued. While no periodic reinspection is at present established, it is nevertheless desirable, in preventing marked deterioration in efficiency of the system which is no doubt permitted in cases where an owner considers a repair bill only as an unproductive addition to his overhead.

THE CHAIRMAN: The discussion on this carefully prepared and excellent paper will be opened by one specially appointed by the American Federation of Labor.

DISCUSSION.

Mr. Timothy M. Daly, President, International Polishers', Brass-and Silverworkers' Union.

The exhaust system that we asked for as laid down in your laws is found to be a necessity in our trade, more so than any other known trade except one. When we had no exhaust fans the percentage of deaths in our trade caused by tuberculosis was 90 or more. As the exhaust systems introduced became more perfect and the laws were properly enforced, we found that average greatly reduced, yet with all the safeguards we still have a death rate from tuberculosis alone of nearly 60 per cent. We get that record from our reports at headquarters, of deaths of members in good standing. These reports are accompanied by a doctor's certificate stating the cause of death. We find there is very little complaint against the written law on the part

of our members but we have great difficulty in having the law enforced. We find that inspectors are often willing but incompetent. They have no practical knowledge of the business and they become careless in time. I have seen inspectors depend upon sight or feeling in passing upon certain exhaust systems, instead of testing scientifically the force and volume of air drawn through the pipes. They placed their hand at the mouth of the hood and when they felt a good strong draft of air have said, "There is nothing wrong with that blower." They have turned to the men in the room and asked them if they did not agree with him. The workman in most instances felt that he was liable to be misunderstood if he did not agree with the inspector and feared that later on he might probably be picked out as the one that was responsible for the filing of the complaint. He therefore agreed with the inspector's opinion. We find, where there are honest and competent inspectors, that employers very often speed up their fans to the required number of revolutions when they know the inspection is about to take place, and immediately after the inspection, they again reduce the speed of the fan and in that way render it comparatively useless.

We find that employers avail themselves of the men's ignorance of the conditions of the law in other ways. At times the workmen complain about having hoods of any description over their wheels, because of the slight inconvenience the hoods cause them when handling some classes of work, and they deliberately remove the hood, thereby removing the benefits that are supposed to be derived from the use of it. The employer then uses this short sightedness on the men's part as an argument against the exhaust system in its entirety and claims he should not be put to the expense of installing an exhaust system when the men refuse to use it. There should be some provision in the law compelling the employee to use the system, for the benefit of the health of the public. We find that the fair employees and employers recognizing the value of the system, as a preventive of tuberculosis, are more insistent than ever that the law be enforced. Another drawback in polishing rooms is the dirty nature of the work. Employers usually look for some out of the way part of their building in which to do the polishing. They often do it in dark and ill-ventilated parts of the factory which tends to increase the liability to disease.

In glancing over your rules, I find one that strikes me as a useless and unnecessary expense imposed upon the employer. I refer to the rule here which requires, where there are polishing wheels, emery wheels and buffs, that two different systems of pipes be used in both operations. The presumption is that it will reduce the danger of fire from sparks from the emery wheel coming in contact with the lint

from the buffs, passing through the main pipe. I have been a polisher for thirty-five years and I have yet to know of any instance where a fire took place from an emery wheel when the hoods were kept reasonably clean, and I have never known sparks from the emery wheel to set fire to anything, although fires have started in exhaust pipes from combustion due to the failure to clean them out. I believe that the enforcement of such a clause would add an unnecessary expense and in that way increase the opposition and resentment to be expected from employers who desire to do something to comply with the rules and regulations of the Department. I might remark that the New York regulations have that same provision under the head of recommendations. This is optional in that State. It applies particularly to sparks that do not hold the heat and do not start a fire of any description unless constantly playing upon accumulated grease. Polishing stove plates will bring about as heavy a stream of sparks as any I know, yet you can hold your hand directly under the wheel without burning it. These sparks are not more than 6″ inside the suction pipe before the heat is entirely gone from them.

FROM THE FLOOR: Where polishing and grinding is carried on, is a physical examination of the men made prior to the time that they are put to work? I am wondering if men go to work at what they know to be a dangerous trade. I am sure that if the family history of some of the men were looked into, it would be found that very many are subject to tuberculosis. It is a subject in which I am particularly interested.

MR. DALY: I attended a hearing some weeks ago by the Industrial Commission of Ohio and I heard a prominent physician declare that every person has the germ of tuberculosis in his or her system, that none are without, but that some are strong enough to throw off these germs and are not in much danger as to their health. To become an expert polisher, a man must start at about 14 or 15 years of age. Several States now have a minimum age of 18 years for apprentices at our business. In my day, they began at the age of 10, 11 or 12, but now several States have adopted the age limit above referred to and in no State that I know of, do they have any regulations permitting them to work at polishing under the age of 16. We have no physical examinations in any factory that I know of, and no later than yesterday, the Convention of the American Federation of Labor in Philadelphia, went on record, refusing to permit any physical tests as a requirement for employment. Labor organizations are opposed to this provision of the law, because of the possibility of using it in discriminating against certain employees.

MR. DOYLE: The Prudential Insurance Company have a set of statistics on dusty trades, and the death rate in those trades from

tuberculosis. They show the flour mills as holding the record for a high death rate; next come the metal polishers, and they give us an average death rate of 61 per cent from tuberculosis alone; that, with all the safeguards that have been thrown in. But I should again like to emphasize the fact that our common cause of complaint today is not so much, I think, requirements of the law, or the lack of the same, as it is the lack of proper, competent enforcement of the law. There are times when inspectors are too rigid in their demands and bring on unnecessary opposition; at other times they are too lenient, being too ready to listen to a few kind words, and too willing to accept flimsy excuses for the non-compliance with the law. But where inspectors know their business, and are trying to be fair to the public and to themselves, we find there is little cause for complaint. One of the model polishing plants of this country is in Indiana; the National Cash Register Company has another splendid plant. The L. C. Smith Typewriter Company has a very fine blower system, and we find that they are gradually improving. Pennsylvania, up to this time, is in the rear in protecting the lives and health of metal polishers, but it is hoped that in the near future she will be one of the foremost in this respect.

Mr. Frank Lane, Superintendent, Chemical Division, Harrison Bros.:

I do not come before you as a polisher. We have similar problems in the manufacture of paints, colors and chemicals. We have been doing a great deal of work in this line, and also making many tests in the laboratory. We find that we are pretty much alone in the work; that is to say, we have no guides, sketches, drawings, or anything that would assist us in this particular work. Of course, there is the first thought, the safety of our employees, and the safety of the employees takes us along other lines; for instance, if the employees are working under safe conditions, in a room devoid of dust, they work more rapidly, as has been proven by our Company time and time again. The dust of the products that we are manufacturing is also part of the profit. It is essential that we collect those dusts; some are inflammable, especially the dusts of the Para colors, which are highly so. They are a menace to the factory as sparks from a belt or hot bearings would easily start a fire.

A suggestion was made that perhaps this would be a good time to bring before this Convention the lack of standards for exhausts, and for that reason I came before you; not to enlighten you in any way, but rather to see if it were not possible to get in touch with those who are engaged in the same class of work. There is no law in Pennsylvania that compels us to put in a particular style of ex-

hauster or blower. Our Company would welcome something in the way of a committee looking toward some legislation along this line. We are ready to take up the matter and assist as much as possible. We have had with us an ex-fireman of the City of Brooklyn, and he has assisted us quite materially in our problem of exhausting the dusts and doing it in a safe way from a fire point of view.

Mr. John Roach, New Jersey State Department of Labor:

I attended several of the meetings of the Industrial Conference Board, and quite strongly presented to them that the regulations for the control of dust, that a number of years of practical experience has shown to be sound mechanically, and from the point of health, very advantageous to the workers in New Jersey, are, in my judgment, regulations that might be adopted by Pennsylvania or any other State. A few years ago, in New Jersey, the law regulating the proper control of dust, was, from a mechanical point, vague and it would have been impossible for manufacturers to comply with the statute. After a comprehensive investigation of dust control, a meeting of engineers familiar with blower practice was called in Newark, and regulations were prepared which corrected the mechanical errors of the law. Under the new regulations the pipe sizes are as follows: Wheels 6″ in diameter shall have an exhaust pipe 3″ in diameter; from 6″ to 16″ the pipe must be 4″ in diameter, and from 16″ to 24″ the exhaust pipe must be 5″ in diameter. The main duct at all cross sectional points must have an area 20% in excess of the combined areas of all branch connections throughout the entire system. A suction sufficient to raise 2″ of water in a U-shaped tube must be generated: Test to be made by pressing a rubber hose over an opening in the branch pipe within 15″ of the hood. This kind of blower system is mechanically correct, it gives the greatest possible amount of protection to the worker with a minimum of cost to the manufacturer.

After having settled the question of dust control in the metal industry, the question of efficient blower systems for dust in other trades was then taken up. In the hatting industry the worker suffered a peculiar hazard from dust owing to the fact that the fur entering into the manufacture of the felt hat, in one of the earlier stages of the process was treated with a solution of mercury and nitric acid. Dust impregnated with this compound causes anemia and improverished condition of the blood. Insurance records indicate a high death rate from tuberculosis in the felt hatting industry. In hatting, the pouncing operation causes the greater amount of dust owing to the fact that the hat spinning rapidly on a block is treated to a sand papering operation. We tried many experiments

with different sizes of branch pipes and various types of hoods before deciding on the present specifications. Our specifications on hat pouncing are as follows: Hoods to be constructed in accordance with a blue print furnished by the Department of Labor: Block pouncing hoods must have an exhaust pipe 5″ in diameter; brim pouncing hoods must have an exhaust pipe 4″ in diameter; main duct must have an area 20% in excess of the combined areas of all branch pipes at all points throughout the system. A suction sufficient to raise 2″ of water in a U-shaped tube must be generated at a point within 15″ of the pouncing hood. This kind of blower system will positively control pouncing dust and reduce the health hazard to a minimum. In the old days, the blower systems that were installed in the hat shops were utterly useless; in many instances the dust confined by a hood that lacked sufficient suction was whirled back into the face of the worker and increased the hazard instead of diminishing it.

In New Jersey, the Commissioner of Labor assumed the responsibility for demanding blower installations in hat shops, for the law until April, 1911, referred entirely to buffing, polishing and grinding wheels. In 1911, a law was passed giving the Commissioner of Labor power to remove all dusts, noxious fumes and excessive heat; this act is comprehensive enough to cover about everything in a factory that can be aided by an exhaust system. Before deciding on specifications for the handling of fumes from machines in printing establishments, the Commissioner of Labor deputized me to investigate methods used in other states, notably Illinois and New York. I found that, while something had been done in this line, no specifications had been adopted requiring all installations to be of the same character. I believe the general construction of the noxious fume law is that installations shall be "sufficient and suitable." This is a very unsatisfactory method, especially where it is ordered in by a Department of Labor, for usually what is installed as "sufficient and suitable" will depend in a great measure upon the judgment and courage of the inspector, tempered by a good-natured acquiescence of the employer. It is much better to decide on a type of installation for a particular industry and make the installation of that type mandatory, rather than discretionary with employers.

The Department finally decided on the following specifications for linotype machines: Each metal pot to be hooded; hoods to rest within 6″ of the top of the metal pot; each hood to have an exhaust pipe 4″ in diameter; the main duct to have an area at each cross sectional point equal to the combined areas of all branches at that point. An air velocity of one thousand feet per minute must be generated in each branch pipe, test to be made in the throat of the

pipe at the hood, with an anemometer. On stereotype kettles the size of the suction pipe leading from the hood depends on the size of the kettle. In the case of linotype machines each branch pipe will exhaust about 85 cubic feet per minute, thus, reducing the heat evil and providing a much more comfortable work room. The installations made under these specifications have proven very satisfactory to the linotype operators and stereotypers. On the whole, I think it is safe to assume that all kinds of dusts are harmful and should be controlled and removed from the breathing zone of the worker. In the old days a strong protest was made against installing blowers for the control of dust in wood working establishments, numerous manufacturers asserting that wood dust was not harmful. But it has a very dangerous effect when it is breathed into the lungs. Tuberculosis among wood workers is very prevalent. Sand papering in a wood factory is most menacing to health, and in New Jersey we have made it a point to demand blower protection for all wood working operations. On account of the great multitude and variation of wood working machines we have not been able to adopt positive standards, but the Department insists on each blower installation being submitted to it for approval before the work of installation has begun. An expert on blower systems examines all plans and corrects them.

In the handling of dangerous acids such as nitric, muriatic, sulphuric, hydrofluoric and others of dangerous nature, the Department furnishes blue prints showing the type of duct to be used, the size of the duct and the size of the opening near the acid pot. In the case of acid fumes, the Department requires the fumes to be drawn off of the back of the pot before they can rise in the face of the worker. It has been found by experiment that a duct constructed in accordance with plans furnished by the Department will accomplish this purpose if a velocity of one thousand feet of air per minute is secured. The test is made with an anemometer.

GRINDING AND POLISHING MACHINERY.

Charles G. Smith, President Pittsburgh Emery Wheel Co.:

Fifteen years ago there was hardly a grinding or polishing machine that was substantially mounted on a concrete or brick foundation. They were bolted to floors or timbers which allowed consider-

able vibration in the machines and in the case of grinding machines, caused the wheels to become out of round, and the extravagance of continually dressing the wheel. On this account, in recent years, most machines have been mounted on concrete foundations with the wheel spindle leveled up.

From fifteen to twenty years ago practically all the grinding and polishing machines that were in use had very light spindles, but since then there have been several builders of these machines who have brought out entirely new designs with spindles of considerably larger diameter and with the bearings very much longer than were then in use. All these features have been improved, not only in regular floor grinding and polishing machines, but in all other types.

All manufacturers of universal and cylindrical grinding machinery are equipping their machines with very substantial hoods for the protection of the operator and all manufacturers of wheels that are used with this class of machine are balancing their wheels so as to make them run perfectly true without any vibration.

Some years ago wheels which had tapered sides held with concave metal flanges, were placed on the market; these being thicker at the center than at the rim, the idea is that should a wheel break, the collars will hold the parts together.

About fifteen years ago the taper on the sides of these wheels was one-half inch to the foot on each side and the flanges were made of grey iron castings, but when it was learned that about 30% higher speed than was commonly recognized as a reasonably safe speed for emery wheels, would give so much more economical production, these flanges were produced of steel which considerably lessened the casualties. But after several wheels broke, we changed this taper to three quarters of an inch to the foot on each side and increased the thickness of the flanges, since which time there have been practically no serious accidents, where wheels are used under these conditions. Practically all accidents that have happened have been caused by the use of flanges that are too small in diameter and leave too much of the wheel exposed beyond the rim of the flanges.

The use of the swing frame grinding machine has become general in large and small factories, especially in steel foundries.

In recent years the manufacturers of floor grinding machines, and some of swing frame grinding machines, have equipped their product with safety protection hoods. At first these were inadequate in many machines and a great many users of machines have improvised hoods, many of which are absolutely worthless as a factor of safety and are no more than a spark deflector. All machines using grinding wheels without these tapered flanges should be equipped with a very substantial hood.

Recently there has been a movement towards the removal of the dust from all grinding and polishing machines and there are now some manufacturers working on designs for taking care of this. The germ of safety appears to have spread until it has reached a point where "Safety First" has become a general slogan and the only feature that I fear is that we may go too rapidly to the other extreme and thereby hinder the proper development of the movement.

The Department of Labor and Industry has tried to work along a sane and sensible line and the movement toward standardizing the safety devices used in connection with hazardous practices has not been commenced too soon. In the enforcement of any law, it must be recognized, however, that there are certain operations that will prohibit the use of any protecting device and such machine should be kept in good repair to minimize the liability of accidents.

The National Association of Abrasive Wheel Manufacturers has a safety committee which has been doing some hard work towards getting a set of standards adopted which practically conforms with the standards adopted by the committee of the Department; and proposes to submit these standards not only to this Department but to the commissioners of labor of the various manufacturing states, insurance companies, and various trades bodies, as well as to the users of grinding and polishing machinery, in an effort for co-operation.

MR. DALY: There are no wheels built now that burst; I have not heard of a case of a bursting wheel in five years, but a time was when they were rather flimsy; now they are built with more regard for safety, and they are, in the end, more economical.

FOUNDRY REGULATIONS.

Mr. J. R. O'Leary of the International Molders' Union, Cincinnati:

When Dr. Jackson asked me to prepare a paper on "Foundry Regulations" I believe he had in mind, that we would have completed the work that we were engaged on in New York. Not having completed the foundry rules, I feel that it would perhaps be a little premature to bring them before the meeting for discussion. Therefore, it is my purpose to go into the conditions in the foundry as we see them. Perhaps some of the statements which will be made may sound harsh and may grate on the ears of some. But when you hear of the existing foundry conditions in this State, I think you will agree with

me that neither the criticisms are harsh nor the picture overdrawn.

There is an awakening in the foundry. Men who have swallowed their "peck of dirt" and who have also felt the cold draughts on their overheated bodies, are awakening to the fact that foundries can be, and some are, operated along lines wherein the abuses can be reduced to a negligible quantity.

Statistics recently gathered show that the average period worked at the trade is ten years after graduating from an apprenticeship, and with the development of molding machines, future statisticians may show even a shorter period for the foundry mechanic to work at his trade, for the mechanical appliances tend only to increase output and not lessen the burden of the man. He has discovered that foundries have been built, and are being built today, with little or no thought given to the health and comfort of the men employed therein.

The architect or foundry engineer may have such ideas in mind, but they are kept in the background. Initial cost prohibits including them in the plan. Were he to give equal thought to the health and comfort of the men employed, and insist upon the working out of details with that end in view, he, too, would have to seek other employment, for the paramount purpose is to devise a substantial structure having efficiency sticking out all over it, and if the shop is located in a state having in operation a fair compensation law, provision is made for safe machinery, so far as life and limb are concerned. The insurance inspector would compel safeguards to measure up to the standard set by the National Committee of Safety or the concern would be put in an extra hazardous class and their premiums would be higher.

With the molder, however, it is not always a "life-and-limb" proposition, as the risk of accidents is sometimes called. With him it is also one of health and comfort, life being just as dear to him and his family, whether it is snuffed out as the result of an accident, or whether it is taken by the slow process.

From the viewpoint of the stoic, having the interest of those dependent on him first in mind, the quicker way would be the better. The great effort of the molder today is directed toward an agitation that will result in safeguarding the health and comfort of the man and in that way conserve his earning power to himself and his family, and maintain his efficiency to his employer. Safeguarding the "life-and-limb" of the molder is also important.

Inspection following compensation legislation is bound to improve conditions in the dangerous machinery proposition. The adoption of rules for the regulation of certain conditions relative to health and comfort will take care of the other. That the various states have

the right to regulate foundries with the view to developing a higher hygienic standard is generally admitted, for under the police power vested in all sovereign states, the health of the community is of first importance; the safeguarding of "life-and-limb" being only of equal importance. It is a more difficult matter, however, to establish certain facts in controversies bearing on the possible effect of a particular gas, fume or dust on the human family than the effects of an accident. The latter is generally visible to the eye at a glance. Experts can be hired in sufficiently large numbers to testify that certain gases, fumes and deposits are not detrimental to the human family. One case will give an idea as to the mental curve of the expert, that of the People vs. the Amalgamated Copper Co. in Montana, when experts testified that the arsenic deposited from the smoke of the smelters assisted in fattening the cattle on the ranges thereabouts. The cattle men knew that the cattle died and veterinarians said that they were poisoned from eating arsenic deposited on the grass. The expert testimony received very much consideration in the final determining of the case.

In a recent hearing, a foundryman from Buffalo told of a man not in the best of health who worked as a furnace tender, assisting in the melting of copper, brass and composition metals. After a time the man's health had improved to such a point and his weight had increased so much that he was prepared to state that the fumes, etc., were not only not a detriment to health, but in this case that the man's health really was benefitted. We do not expect reasonable men, who have to do with the regulating of abuses, to be governed entirely by the testimony of experts.

In the correcting of the evils in the foundry we contemplate moving along rational lines only. We don't have in mind going to the Legislature and crowding through radical laws. We believe that the time has arrived when some thought should be given to the correcting of the abuses and our bill of complaint against existing conditions is quite an extensive one. We will grant you that production of castings is one of the rougher trades. It is not like any of the building trades, neither is it like any of the indoor trades we can think of. Men work with but scant clothing on; an abundance of clothing would impair the man's efficiency. Hence when we arrive at the shop in the morning we would feel better if the heat were generated by something other than a salamander, which throws out much smoke and gas and little heat. We would be in a much better mood were the sanitary arrangements inside the shop kept warm and clean. The milk of human kindness would not sour as the day wore on, if the ladles were dried in an oven or outside of the molding room, thus preventing the filling of the shop with smoke and

gases. A suitable wash room at a convenient point, warm water at all times; a shower or two to remove the smut and perspiration of the day and so give consideration to others on the street car going home; furnishing the men with a room in which to dry their working clothes, so that they will not put on damp clothing each day; furnishing lockers in which to put their street clothes while at work: these things would add greatly to the health and contentment of the employees.

Accidents would not occur, if the center of gravity in the crane ladles was below the bail and a geared device used to tilt the ladle. Tilting levers should be prohibited and dog locks on all crane ladles should be insisted upon, as should limit switches on electric cranes, and a competent operator in the cage. A rule to define competency in a crane operator should be formulated. Many operators work four controls at one time. The limit should be two. Where there is more than one electric cage bridge crane in a plant the position of the various controls on each crane, as they relate to each other, should be the same. Crane operators are changed about frequently and mistakes are made where the controls are differently arranged. Ladders should be provided for the crane operator to get to and from his cage. All cage bridge cranes should have a floor attendant to protect the other workmen from accident when the crane is in operation. A safe bumper block should be attached to the girders and not to the rail. The floor under the cupola should drain away from the base of the cupola. Walls should be whitened at stated periods and the roof and windows kept in repair. Vestibules should be put on doorways that are used frequently during certain periods of the year to prevent draughts. Railroad and loading doors should be kept closed when not in use. Sand blast cleaning should be prohibited in the foundry. Cores should not be blown out of castings in the foundry building, nor should the drop be used for breaking castings during the working period. The use of high explosives in the breaking of castings should be prohibited. A standard trunion should be designed, with specifications for materials and methods for attaching same to flasks. In brass shops where a smoke finish is desired, smoke-boxes connected with flues to the outer air should be provided, as should ovens for the drying of bench and tub work. Where present construction will not permit of the erection of ovens, drying stoves should be encased for the purpose of confining the heat. Basement brass foundries should be prohibited. In other rooms occupied as brass foundries, ceilings should be of a height to permit of proper ventilation. Smoke and gas of furnaces and ovens should be trapped at the point of origin. Where hoods and natural ventilation will not carry these away, mechanical means should be

employed. Elevated furnaces should be permitted only when surrounded by a platform of adequate width guarded by a standard railing. Tumbling barrels when located inside the foundry building should be equipped with an exhausting device and where a large casting must be cleaned or chipped inside of the foundry, a curtain or screen should be provided. Counterweight chains and cables on oven doors should be inspected frequently by somebody in authority and reports as to their condition recorded as should also inspections and reports on shanks, yokes, bails, chains and ladles used in the pouring of metals. Open fireways in ovens should be abolished. Gangways should be of sufficient width and without obstruction during the pouring period. Where tracks are located, the gangways should be built flush with the top of the rails, and of a hard material. Palatable drinking water should be furnished. Flasks and bottom boards should be in good repair. Charging platforms and runways and all stairs should be protected by a standard rail.

Where natural light is insufficient, artificial light commensurate with accepted scientific standards should be provided. First-aid kits, properly equipped at all times, should be in foundries and available for immediate use.

There is ground for complaints and suggestions. Many of the safety engineers have yet to give a first thought to the foundry devices as such, and the "Committee of Three" have in many instances overlooked the important things of which we complain. The molders of this country are paying a terrible toll for the privilege of working at their trade. We believe that all fair foundrymen want to correct the abuses. The unfair foundrymen should be compelled to correct them. It is useless to put it up to the various labor departments, for there are no rules or standards governing foundries, and the inspector is at sea.

In some states the foundrymen recognize that the abuses exist and movements are on foot to correct them. In New York State, an auxiliary committee to the Industrial Board was formed early in the summer of 1914. This committee is composed of five foundrymen and five molders. They met and organized and held hearings in many of the important foundry centers of that state with a view to learning the needs of the situation. Tentative rules were drawn up which the foundrymen and others interested were given an opportunity to criticise or approve changes being made to meet the needs of the situation. On the completion of the work of the auxiliary committee their report will be submitted to the State Industrial Board. An open hearing will then be held by the Industrial Board, but the hearing will not excite any antagonisms, as the parties interested have thrashed the thing out and unanimously

agreed on all points before making their report, and the Industrial Board's labors are brought to a successful conclusion with the knowledge that the rules can be enforced, for the foundryman and the molder got together, and agreed to them.

New York has led the way in foundry reform, Pennsylvania is following closely, arrangements having been made at a recent joint meeting for the appointment of an auxiliary committee.

Massachusetts will be third in the movement for the auxiliary committee idea and we hope, before many months have gone by, that a general movement will be in full swing, whether in the foundry trade or any other, to correct the abuses which exist. We have attempted to discuss the question as practical men. It would be folly for us to hope to bring about immediate changes. We can only point out the abuses, hoping that the foundryman will recognize the defects and co-operate with us in bringing about improved conditions.

DISCUSSION.

Mr. A. W. McCoy, Inspector, Department of Labor and Industry:

I should like to know what is good practice or the best standard on these guards around the "drop"—height, distance, width and construction.

MR. O'LEARY: I should think 8 or 9 feet would be a sufficient height for the shield to be constructed, the height of the machine and width of the same to be determined by the necessities; the kind of castings to be broken, etc. It could be constructed of wood with substantial sheathing for the shield.

MR. McCOY: I have a case where that is not sufficient.

FROM THE FLOOR: In our case it is sufficient and our experience has been that it has worked out wonderfully well. In our requests for protection from the "drop," the question has been asked, why we did not give thought to the protection of other parts of the foundry. We have attempted to work the thing out to give the best possible results and also protection to the man who is employed in the yard.

MR. O'LEARY: I think about 10 or 11 feet, as I gauge the distance now along the wall would be a reasonable height, but no matter to what height you go, at sometime you may have a fragment of the metal fly over the wall, and if someone is close by, he is liable to be hit. There may be some who might favor that height as a recommen-

dation, but there is no fixed rule or practice on this proposition. I have seen them 8½ feet where heavy castings are broken and where they break lighter castings and fragments are liable to fly, a higher enclosure is used with a "reach" surrounding the top of same to extend inward.

FROM THE FLOOR: I should like to ask a question. What is contemplated by the New York Committee in ventilating brass foundries?

MR. O'LEARY: The brass foundry proposition is one of the most difficult problems confronting the New York Foundry Committee. No matter where you go, the ceilings with some exceptions are very low. We found foundries with an 11 foot ceiling, in a cellar: the ceiling was flush with the line of the street and to permit the fumes and the gases to escape and natural light to reach the room, it was necessary to cut away a part of the sidewalk and put in a grating. Cellar foundries should be prohibited. I have in mind an instance of a brass foundry, I think it is on the sixteenth floor. It is open on three sides. It could be open on four sides, were it not for the fact that the proprietors of a hotel located nearby threatened legal action. As a result, the windows on the side affecting the hotel are sealed. While this gives relief to the hotel, it is a very aggravated situation for those employed in the brass foundry. The company operating the plant evidently feels that it is not entirely responsible for the condition existing in this plant, and they are trying to correct the abuse. The ceilings in that shop are about 14 or 15 feet high. A large hood arrangement which opened into a stack was installed over the melting furnaces. The fumes are exhausted by means of a fan. They could also open the skylights and windows which was a delightful and healthful thing for the men in the summer time, but the reverse in the winter.

FROM THE FLOOR: Are they adopting any particular air movement or air ventilation?

MR. O'LEARY: The foundry committee has adopted a tentative rule only, as their problem has not yet been worked out. They have agreed only on the proposition that, where natural ventilation will not take care of the annoying fumes and gases, mechanical means should be adopted. I know that it would be very interesting to those of you who are interested in the ventilating problems to have the New York State rules shown, but it would be a little premature and I would hesitate about bringing the tentative drafts before you. If any one would like to ask certain questions, I shall be glad to answer them.

MR. W. H. SCOTT: There are some things that Mr. O'Leary brings up which sound very well, but it seems to me that it calls for some

things that sound unreasonable; for instance, drying the men's clothes. How many men in all kinds of employment change their clothes? As soon as quitting time comes, they want to get home; they do not stop to change clothes. This rule may be all right in some foundries, but to include every foundry is unreasonable. Some of the large foundries take account of their men's efficiency by giving them things for their health and comfort. (They have ventilators in the roof that take care of the gases, smoke and fumes.) The smoke is trapped at the point of origin. You take some of the very large ladles that have to be dried, and dried in the foundry; it is quite a consideration. Take the cleaning of large castings; you know some of the castings weigh 60 and 70 tons. It is impossible and impracticable to carry out some of the suggestions in the same manner with several other points mentioned. I think the suggestions are impracticable at some places. In others, they are quite in order. I know of a foundry that has a shower bath and the employees do not use it. It has been standing there, to my personal knowledge for ten years and has never been used by a man in the foundry. It is all right to suggest and recommend, but it is hardly in order to make a law.

MR. O'LEARY: This is the kind of criticism I like. Taking the criticism of drying the ladles, I do not know that the gentleman is aware that they do dry large ladles in the foundries in the State of Pennsylvania today. Many of the steel shops do this by putting a hood over those ladles with an outside connection and blow right into them from a gas or air pipe, the hood arrangement taking care of the smoke and gas. They can put them on the truck and run them into the yard and use an open fire if the hood arrangement is objected to. Smaller ladles could be dried in an oven. All we ask is that we do not have to swallow the smoke. We contend, despite the statement that you make, that it is harmful, and there is not one of us who likes to inhale it. As to the drying of clothes; I hope I understood the gentleman, because everybody knows that in a shop which is not heated—and many foundries are not adequately—they have the same peculiar notion on ventilation and temperatures as people have who ride on railway trains. We believe that the foundries should not only be ventilated, but they should also be heated. There are some shops where they do both. We can cite them if the occasion arises, for Pennsylvania is not alone in the proposition. When they ventilate the foundry, they give a lot of cold fresh air, and the result is, when you come into the shop in the morning that it is not only damp, but it is absolutely cold and the sand is sometimes frozen. A man arrives at the foundry comfortable and warm and the putting on of frozen or cold, damp clothing to work in is extremely hazard-

ous and is bound to be harmful in its effect. Men do perspire in foundries and because of that have to change their clothing at the conclusion of their day's work. We have sought the installation of drying rooms in all foundries, but as yet have not been successful at all points. We have also asked for shower baths. Molders like to take a bath once in a while as well as anyone else though some may not take them as frequently as they should. I do not know the location of the foundry to which the gentleman refers and it may be that the men live immediately across the street or within the shadow of the foundry, and take their baths at home; but there are many who live at a distance from the foundry who would like to change their clothes and take a bath. If there is a shower bath there that has not been used for ten years, it is probably because that shower bath has been put in some remote part of the shop. I know of an instance where an inspector came along and said, they must put in a wash room in conformity with the law. It was installed in a building 140 feet away from the foundry, and upstairs in the far end of that building, a long distance in an entirely opposite direction from that which the men would take in going home. Possibly a similar situation obtains in the case you have in mind. The shower bath may be in a remote part of the shop where the men do not go. As for curtains and other protection from dust and chips, let anyone here who has given that matter serious thought, deny that they are absolutely necessary. Imagine a lot of men being near a large casting that is being chipped or cleaned in the foundry without safeguards of some kind. What protection have the men from the dust and chips that might come from that casting? We ask for a screen of some sort to protect the men. We do not say it has to be of a particular design or make, but we favor something that will protect the men from the flying chips and dust, and it is possibly the most reasonable proposition in the whole list of our recommendations. Take the shop I have in mind, where they blow cores out of large castings, it would be so black around there with dust, you couldn't see ten feet ahead of you, but the men would be obliged to stay there. The men finally objected to the practice. The company decided to do the blowing out at the noon hour; the shop was cleared and the men had to go somewhere else to eat their dinners.

We do not say what kind of ventilators should be in buildings, but that there is smoke, gas and dust in the foundry, and we do not want to inhale it. There have never been any regulations or rules adopted in Pennsylvania regarding foundries, etc., and we have the same condition today in foundries that we have had since they were established. The ground has not been scratched yet, and while we do not expect to correct all these faults at one sweep, we do hope to make a

step in advance in a very short time. There has been a committee appointed in this state of four foundrymen and four moulders, we expect to be able to work out our problem along reasonable lines. Our requests may sound unreasonable, for men have accepted these conditions as a part of that trade; they have been at it so long. Some men would feel out of place were they working in a place like the General Electric Company, of Schenectady, N. Y., where the conditions are good.

I believe I have covered all the gentleman's criticisms. Are there any others who desire to ask any questions.

FROM THE FLOOR: What standards do you have for washing facilities? What amount of accommodation for the men do you suggest along this line?

MR. O'LEARY: I would state on this proposition that Miss Goldmark, Chairman of the committee, having this subject under consideration in New York, has agreed with the foundry committee that the general factory code as it relates to washing facilities should not apply to foundries. The conditions are different from any of the other trades. The hands become very much soiled; likewise the whole body, and a little longer period at the wash basin is necessary, and perhaps the number of wash basins should be a little higher in the foundry than in the general run of factories.

Mr. Lewis T. Bryant, Commissioner of Labor of New Jersey:

Are you going to make these requirements mandatory?

MR. O'LEARY: Yes. They must supply washing facilities.

MR. BRYANT: I have seen a very good system where they have a pipe elevated about 18 inches above a sort of a trough. The temperature of the water is controlled at the one end, and the water comes out of a spigot on each side. The men can then strip to the waist and wash without discomfort and can do it very rapidly. We have introduced that in our State and use it very effectively. Another idea which I think would apply to the same case, is the use of metal lockers and heating of the room from pipes which would be placed near the lockers so as to dry the men's clothes while they are off duty. We are also recommending a double locker where there is one side for the working clothes and one for the street clothes. I think that probably 80 to 90 per cent of the foundries in the State of New Jersey have washing, toilet and dressing accommodations. We insist upon having a blue print showing where they are going to be placed just to avoid such inconvenient placing as you mentioned a short time ago.

MR. O'LEARY: I was in a foundry sometime ago where they had accommodations in a separate building. Why not put them all in one building and avoid the necessity of the men going out of doors?

I believe if we had one locker to put working clothes in at night, I would not wish for anything better. One room would be sufficient. If you could have a room with a partition, one side could be used for toilet and washing purposes and the other for drying and locker facilities. Some concerns have three rooms, also a separate toilet room, but this would involve some great expense.

Mr. J. R. Patterson, Inspector, Department of Labor and Industry:

Do you insist upon a metal locker? If you would put your wet clothes in there at night, how would they get dry? I know of many foundries where the men are compelled to hang their clothes around the cupola to dry. I think it would be better to have a room in which clothes could dry. I should like to mention to the gentleman from Ohio that I have inspected a number of foundries that are equipped with shower baths. I find that they are used very extensively, not only once but, in a number of cases, three times a day.

MR. O'LEARY: In regard to lockers for drying clothes, I know of a wash room that is steam heated and fitted with lockers as well as with washing facilities, and during the night when the working clothes are hung there, the steam is turned on and in the morning turned off. During the day the street clothes hang there. During the night, the working clothes are dried and when the men come to put them on in the morning, they are dry. I think this is an inexpensive arrangement and very practical.

Mr. Joseph P. Quinn, Inspector, Department of Labor and Industry:

The conditions in the foundries are improved wonderfully in Pennsylvania. Bath rooms are being installed with great rapidity and a man does not have to go out in the air before he can reach the bath room. We are not having much difficulty in getting the manufacturer to co-operate with us; if you show him the necessity you will get the results.

Mr. P. T. Thatcher, Safety Commissioner, E. I. duPont de Nemours Powder Co., Wilmington, Del.:

Mr. Roach said that all dust was injurious. I should like to ask if charcoal dust is injurious. We have some men working in buildings in which there is charcoal dust, and we have never found any trouble with the men. Of course, as you know, we do not have many men in that building. They have worked 8, 10 and 12 hours a day for 42 years in the building, and they have been able to raise large, apparently healthy families. In putting in a blower and exhauster

we have spent a great deal of money. We have been trying to find some mechanical means of reducing the dust; but there is the spark to contend with, and if the spark gets in the dust there is an explosion. I should like to know if charcoal dust is injurious, and do manufactures get rid of charcoal dust by mechanical means.

DR. DARLINGTON: All dust is injurious. Some men live for years without any perceptible injury to their health, but as they get older the effects begin to show. All dust should be gotten rid of. Sometimes it necessitates a very great expense, but it is economical in the end. I should be very glad, on some occasion if you were in New York, at the American Iron & Steel Institute, to give you any data that we have in our possession.

Dr. Francis D. Patterson, Director, Department of Sanitation and Accident Prevention, Harrison Bros. & Co.:

We are all perfectly confident that the way to control dust is at its point of origin. We trust that in the near future we can not only reduce lead poisoning, but stamp it out.

FROM THE FLOOR: Mr. O'Leary, in his paper, spoke about the foundry rules in the cellars. Now I should like to know what is good practice, or is there an opinion as to what the minimum height of the ceiling of a foundry in a cellar should be. I should be glad if someone here would give me information regarding this.

DR. DARLINGTON: Perhaps the Commissioner of the State of New Jersey could answer your question. I do not believe that foundries should be in the cellar.

MR. BRYANT: Some of the best foundries that I have seen have an open type of roof or monitor that could be easily opened. Many foundries that have been constructed in the past few years, and those especially that were constructed prior to that, had absolutely tight roofs. I would say that every foundry ought to have a monitor type of roof so that it could be opened from the floor of the foundry. If a foundry has the right kind of roof the foundry will be clear of gas. I should say that the entire question hinges on the type of foundry roof that is used.

With the discussion on foundries closed, the afternoon session ended.

WELFARE SECTION SESSION, TUESDAY, NOVEMBER 17th, 1914, 2 P. M.

Lucien W. Chaney, Representative of Department of Labor, Washington, D. C., Chairman, opened the Session with the following:

We shall now proceed with the afternoon meeting, of the Section on Welfare. We are to discuss two important subjects: First Aid in case of industrial accidents, and Industrial Education. Dr. J. F. Wainwright of the D. L. & W. Railroad Co., will give us some of the methods used on his line by the First Aid teams. I have the pleasure of introducing Dr. J. M. Wainwright.

FIRST AID.

Dr. J. M. Wainwright, D. L. & W. Railroad Company:

Mr. Chairman and Members of the Conference: When the Department of Labor and Industry requested me to come here this afternoon, I thought it would be more interesting to you, instead of reading a formal paper, if I brought a team down and actually demonstrated to you the way we try to teach our employees and the method we use, and incidentally the more or less satisfactory degree of efficiency that we can bring the "first aid" class up to and the ordinary methods of "first aid" to the injured.

We shall start in by demonstrating different methods and I shall ramble along and explain what the team is doing. These men whom I have with me this afternoon are men who work in the foundries.

(At this point, the corps of young men that Dr. Wainwright brought with him, began a demonstration of various "first aid" methods; the Doctor explaining each step in the demonstration. The following were shown: articles in the first aid package; method of dressing wound of the head with a roller bandage and also with a triangular bandage; method of stopping hemorrhage; dressing a wound in the arm pit; dressing a crush of the knee, a fractured jaw, a fracture of both clavicles, a simple fracture of the arm, a compound fracture of the arm, a compound fracture of the leg; dressing a burn involving the entire body; method of making an improvised stretcher,

of placing injured man upon it, of carrying the load over obstacles; method of rescue from live wire, and resuscitation from electric shock.)

THE CHAIRMAN: I am sure that the Conference gratefully appreciates the demonstration that Dr. Wainwright has given. Professor J. C. Scrugham will address us next. He has outlined and carried forth an extensive crusade with regard to "first aid" to the injured, in his State of Nevada.

DISCUSSION.

PROFESSOR J. G. SCRUGHAM: The very meritorious performance which you have just witnessed is an excellent example of what a well trained "first-aid" team can accomplish. I shall briefly discuss the successful methods of organization of such teams as we have employed in Nevada.

The first step was to have the Governor of the State call a conference of all interested employers and employees, at the University of Nevada, last January. This was attended by some five hundred and fifty persons. A permanent industrial safety organization was effected and a majority of the industrial concerns of the State agreed to contribute a pro rata sum of money for its support.

The next step was to secure a car and trainer from the United States Bureau of Mines for training "first-aid" teams in the mines, and a similar car and trainer from the Red Cross Society for instructing railroad shop and power plant teams. At the plant of the Nevada Consolidated Copper Company and allied interests, nine teams were organized. A district meet was held there on the 4th day of July, supplanting a portion of the customary athletic sports. Great enthusiasm was manifested by the adherents of the various teams and the winners were selected to represent the district for the final state-wide competition held on Labor Day at the University of Nevada. Organization of teams in other mining and industrial districts followed as rapidly as the men could be trained. Where feasible, district meets were held to further stimulate interest. Approximately twenty teams were trained during the months of June, July and August, 1914. Sixteen of these teams entered in the State field meet. Prizes for various classes of work were offered and a high degree of perfection was attained by nearly all competitors.

It is planned to hold these general competitions at stated intervals in order to maintain interest in the work. Without such a stimulus, interest is almost certain to lag after the novelty has worn off. It is our desire to have these teams keep up their training and practice very much as a successful baseball or football team would carry on its work.

The benefits of the safety organization at once became evident at practically every plant visited. In Tonopah, an immediate object lesson was secured in the desirability of "first-aid" training through the asphyxiation of two miners in an isolated shaft and the subsequent resuscitation of one of the men. The incident, while unfortunate in itself, gave great impetus to "first aid" work in the State.

I wish to emphasize the great value of infusing the sporting element and the consequent maintenance of interest into "first-aid" work. I further wish to express my appreciation on behalf of the State of Nevada for the pioneer work which you are performing in these conferences. The effect is farther reaching than you realize. Do not falter in your propaganda on account of the apparent lack of results. They are being obtained even though not always visible.

Dr. W. T. Sherman of the Carnegie Steel Co.:

I think most of us have been prone to consider "first-aid" from either a humane or sentimental standpoint. I think we should consider those phases of it but at the same time put forth its economic features. Does it pay? You can answer this as well as I can. Let us take conditions as they existed ten years ago. The average man in an industrial plant who received an injury, either neglected it or went to a policeman or the foreman or a man who had no "first-aid" training whatever or had only a chew of tobacco or a dirty rag put on the injury; never a clean, antiseptic piece of gauze. The result of this was that anywhere from fifty to seventy-five per cent of these injuries became infected. The patient is supposed to have had three times as much disability from that injury as he would have had, had he received proper "first-aid" treatment. Either his joints are going to become stiff or he may lose his arm or leg. It takes three times as long for an infected wound to get well as an uninfected one. For an example of the loss due to infection, let us take an organization employing thousands of men, where you have many of these small accidents. Compute the time lost from the mere fact of infection alone; at the end of the year it will run into an enormous figure.

If "first aid" is to be successful it must be made clear to the employees. The most remarkable thing is to see the interest manifested in this work by employees. Men who cannot speak English literally interpret this sort of work and carry it out as planned. To

stimulate interest in meets, we offer prizes to the men. Then we hold a general meet, giving prizes to the most efficient group and in this way we keep up the interest in the work. If the interest in "first aid" work is lost, the whole proposition is lost.

Our plan has been to standardize everything, if found practical to do so. We have fifty steel stretcher boxes in one of our larger plants. Our box contains a stretcher, a woolen blanket, a "first aid" package and a set of splints. You have seen the magnificient effectiveness and skill with which these men have applied their "first aid" dressings. The great trouble with "first aid" is that too many try to do too much. In other words, they have tried to do as much as a doctor would do. The harm has also been due to the fact that doctors have been endeavoring to do this work under the most unfavorable and insanitary conditions, and therefore render anything but efficient treatment.

During the last five years, there have been over one hundred and fifty thousand men employed in our plants. The number of infections were slightly over one to a thousand. If the organization is thoroughly trained, this work can be done in the most unfavorable surroundings with satisfactory results. It is not necessary to have an expensive equipment. All the equipment needed is a "first aid" package so that the doctor or the person doing the work can lay his hand on it. It is absolutely necessary to have sterilized water in the "first aid" hospitals. It is also absolutely necessary to have clean hands and sterilized material. If you don't, you are going to introduce infection where there wasn't any infection. It would be better to let the wound alone than handle it with dirty hands. We have found that "first aid" work can be greatly overdone.

A "first aid" equipment for a small plant can be furnished for about one hundred and seventy-five dollars; this will give the doctor everything that he needs.

Mr. Donald McCaskey, Surgeon, Pennsylvania Railroad Co.:

Dr. Wainwright and Dr. Sherman have emphasized very satisfactorily this "first aid" proposition. I like what Professor Scrugham had to say of the need for sustained publicity and of their method of keeping up interest in their "first aid" work, for I believe if the general question of a constant publicity of "first aid" work were to be taken up, it would be of more benefit. I am speaking simply in my capacity as a country doctor. I happened some days ago to visit one of the Carnegie Steel Company's works at Clairton, near Pittsburgh, over which Dr. Sherman has supervision, and I was amazed to see the efficiency of their "first aid" methods. I went through one of

their hospitals and the Clairton works and found they have their "first aid" principles very well systematized.

It was also my fortune, a few days ago, to visit one of the more modern "first aid" systems of the Pennsylvania Railroad at the Enola Freight and Car Shop yards. I would advise every man here to go to see this. It is right on the outskirts of Harrisburg. They have a wrecking car equipped for "first aid work." It is a regular dispensary on wheels, ready to take the hospital to the injured man.

The P. R. R. have one of their employees trained even for the treatment of simple scratches and to apply "first aid" at just the right time to prevent the damage of delay and of incompetency which Dr. Sherman referred to. This Hospital Car has everything necessary for the work. I asked the foreman in charge, Mr. C. D. Gray, what the result of this work was and he told me that during the last five months, they had treated 825 people and that only six of these had to be taken to the hospital.

Dr. Francis D. Patterson, J. G. Brill Company, Philadelphia:

I am glad to say that there is no man in this room who is more vitally interested in the "first aid" treatment of accident cases than I am. In the various companies with which I have the honor to be associated, it is a rule to secure the immediate, competent, surgical treatment of every accident case that occurs. We regard it as a serious breach of discipline if any employee who has the misfortune to receive an injury, does not immediately present himself for treatment at the plant dispensary, and such neglect would be a matter of discipline.

My experience of nearly twenty years has taught me that a slight accident which is neglected and does not receive prompt, competent surgical treatment, may be a much more serious accident than another, the seriousness of which causes the individual to seek surgical advice. This experience has taught me the frightful consequences due to septic infection which may follow a very slight cut. Within the last two years I have not seen a single case of septic infection as the result of neglect of a cut.

Mr. M. C. Goodspeed, Electrical Engineer, General Electric Co.:

When Dr. Wainwright illustrated his method of resuscitation, he used the Sylvester method. There is also the other method of resuscitation, the Schaeffer method. It can be worked by one man. It can be worked considerably longer by that man and is easier to work. The tendency with the Sylvester method is to tire the operator much faster than with the Schaeffer method. One point that was not emphasized was that the man should be resuscitated as soon after the

accident as possible. A delay of sixty seconds in starting artificial respiration may prove fatal. Therefore, it should be urged that the man be carried to as short a distance as possible. If not necessary, don't carry him at all. Roll him over and start respiration. One man can do this easily with this method and can keep up the action for an indefinite period.

Another point that was not brought out is, that after a man has been brought back to consciousness, he should not be allowed to get up, as the reflex action on the heart may throw him back into unconsciousness and he may not be able to be brought to again. More men succumb to shock because the operator has given up too quickly than from the real effect of the accident.

THE CHAIRMAN: Before passing to the next part of the program, let me give an illustration that came to my knowledge only a few days ago of the importance of this matter, the well systematized "first aid" and of carrying it through to the final point. One objection which I have had in the past to "first aid" is that it has been assumed to be final. A great many wounds which have been treated with ultimate skill and care have been supposed to be thoroughly treated and they are left at that point. I think too much emphasis cannot be laid upon the fact that "first aid" is not final aid. It is a temporary means of taking care of the man until he can reach a place where better care can be taken of him.

We shall now take up the subject of "Industrial Education." Mr. C. R. Dooley of the Westinghouse Electric & Mfg. Co., of Pittsburgh, Pa., will have the first paper.

INDUSTRIAL EDUCATION.

Mr. C. R. Dooley, Westinghouse Electric Company, Pittsburgh:

I hope you will not take what I have to say as an attempt to contribute anything final toward the solution of the nation wide problem of industrial education. Conditions vary so greatly that there can hardly be any one solution and therefore the time will be more profitably spent if I confine myself to a simple explanation of what we are doing at the Works of the Westinghouse Electric & Mfg. Co. at East Pittsburgh. Each of us will have to work out his own salvation and almost any plan will work if you have the right man behind it.

Our educational work has three distinct divisions: One for training Trades Apprentices, another for training Salesmen, Engineers, and various other technical experts, and the third for training unfortunate but ambitious and able young men in fundamental science, enabling them to qualify for the second division as mentioned above.

Just a word of history concerning the growth of this work at our plant: Twelve years ago (in 1902) two or three of the Company officials started a night school as an experiment in social betterment. The initial enrollment was something like 75 students with 4 or 5 teachers. This year the enrollment will be nearly 700 with a faculty of over 40. The success of this school together with the wave of industrial education that struck industry in general a few years later, lead the company to reorganize its Trades Apprentice courses, adding class training on company time. This was done seven years later (in 1909). In the Spring of 1911 the graduate student, or college apprentice course as it was then called was entirely reorganized, adding systematic class instruction. I shall discuss each of these in what seems to be their more logical order rather than in the order of their development.

The Trades Apprentice Course: The old regulation apprenticeship course in several trades had long existed within the company. Apprentices were tolerated. Year by year competent skilled workmen were more difficult to find. Those who applied at the gate were not only deficient in mechanical skill but utterly lacking in general education and especially in arithmetic, drawing and English.

Class instruction was started in 1909. It is compulsory. Each apprentice attends two periods a week, two hours each period. One period is devoted to shop problems and one to mechanical drawing. English is introduced wherever opportunity allows. The year is divided into three terms of four months each. There are no vacations. Promotions are made upon daily work done, term examinations, and the judgment of the instructors. Individual promotions may be made any time the student is able to pass. The teachers are all practical men from the Works and not professional teachers, we make our own text books presenting shop conditions as problems to be solved by the aid of intelligent thinking instead of by rule-of-thumb handed down by shop tradition. We do not teach arithmetic; we do not teach proportion, fractions, decimals, etc.; we give no rules to be committed for future use as they may be needed; we never give a method of solution until a shop problem calls for it. The need of a principle always precedes its study and the final statement of principles is left to each student to put in his own words. Mechanical drawing is taught in the same way. This method works, simply because we catch each apprentice with his interest at its high-

est point for he is always interested in his work and easier ways of accomplishing it.

In the shops the new boys are put first in a training department where speed is made second to accuracy and a detailed knowledge of the tools is obtained. Here also each apprentice is studied by the shop instructors who are in charge and his future specialization is guided according to his ability. When a boy has reached a certain proficiency on one tool, he is transferred to the regular shop and put on production work. This occurs at the end of from two to four months. After six to eight months in regular production work, he is brought back to the training shop and the cycle is repeated on another tool, or in an entirely different line of work.

While the boys are in the regular shop they are supervised by a foreman giving all his time to his job. The success of the shop training of the boys is due largely to this supervisor. He must be a successful go-between and adjust hundreds of awkward situations between apprentices and foremen.

Since the reorganization we have graduated 125 apprentices, mostly in the machinist trade, though a number in tool making, carpenter work, and electrical winding and testing. Of these 70% are still with the company and 15% are holding positions of higher responsibility such as foremen, inspectors, etc.

The wages paid are 11c, 12c, 15c, 18c per hour for each of the four years respectively, with a cash bonus of $100.00 upon completion. The Company furnishes all equipment and class-room instruction and materials and pays the regular rates for all the time in the class room. The number of apprentices varies, from 150 to 300 depending upon conditions of work in the factory.

The Graduate Student Course. This is too long a story to tell in detail here. The course is offered only to the graduates of approved technical schools or the equivalent, and then a very rigid system of selection is followed. The time is one year. One hundred men are appointed each spring from the classes about to graduate, by Company representatives who visit some 75 colleges and universities scattered all over the United States.

Students are assigned according to a schedule allowing six weeks in each position in the manufacturing departments and three months in each position in the testing departments. The whole year is spent in the factory and not in the offices. Each student attends class one period of three hours each week. The class meetings are for the purpose of free discussion of the work done in the shop in order to increase the efficiency of the student's observations and deductions, and to make him as familiar as possible with the Company's product. Frequent examinations and quizzes are held to give all possible op-

portunity for the students to express themselves. The first object here is to study the students and assist them to find that specialization for which they are best adapted before taking up the special training. A full year is allowed for this. Therefore, the big object of this year's work is segregation and the following departments are open to choice: Engineering, Manufacturing, Testing, Sales and Construction. We also assist students to find positions outside of the Company in both the operating and the teaching fields. Those who do not attain a certain standard in ability and personal attitude leave the Company upon the completion of the course. The others—and they are the very large majority—remain from one to four months longer, taking special training in the department which they have chosen and then are absorbed as regular employees.

About 75% of the officers and department heads now in office have come to the Company as young men and have grown up through the organization. This is the only method followed by any large company in building up its organization. Men of experience who get in by other means and usually at an older age are the exceptions.

In addition to this the Westinghouse Club offers many opportunities for the study of engineering, not only as applied to the specific work of the Westinghouse Company but to all the industries in the Pittsburgh district. Lectures, Technical study sections, Industrial excursions, etc., are among the activities of the club, to say nothing of the purely social and the athletic activities. All of this is voluntary and a small fee is charged for membership.

The Casino Technical Night School. This school is virtually supported by the Company although it enjoys a legal independence, managing its own business. Attendance is purely voluntary and admission is extended to any one regardless of employment or previous education. The tuition charged covers about one-half of the operating expense. It operates four departments of which the Engineering is the largest; Preparatory, Foreign, Women's, and Engineering. The Engineering Department is a four-years course in fundamental engineering principles and is able to fit young men of ability for high class engineering work. While it cannot give all the good things that are offered at one of the first class engineering colleges, for lack of time, yet the essentials of engineering are given, and under such an intensive industrial and commercial environment that the personal power attained by the students is wonderful; in many cases surpassing that attained in the regular daytime courses at other schools.

The Alumni now hold positions that fully justify the giving of such an opportunity to young men who have been forced by circumstances to earn their living since they were twelve and fourteen years old. These men are to be found now in the Sales, Engineering, and Works departments, carrying heavy responsibilities.

The school was started in a small way in a frame store room but was soon moved to the Turtle Creek Public School Building, through the courtesy of that board. Practically the whole building is now used and it is but a question of a short time until the Casino School will have to have a plant of its own.

The Preparatory, Women's and Foreign departments having large elements of social service in them, it has long been felt that in some way the public at large should contribute to some degree in the expense and possibly participate in the management. To this end a joint meeting of some ten or twelve of the local public school boards was called last summer. The interest was very great and in the early fall seven districts definitely agreed to join the plan and to contribute their pro rata share. This at once brought up the legal question of the expenditure of public school money in a school over which the public school boards had no control. Legal advice has been conflicting but we hope to get the question settled during the present winter. In the meantime we are going ahead with the plan. Some districts are paying, some are not, but a movement of closer co-operation between the public school system and industry has been started and will undoubtedly result for good. For the best success of this sort of school there must be a triple relation—The Student, the Industry, and the Community. Each must have a share in the management and each must contribute to the support.

In Conclusion. It is not difficult to make successful teachers out of practical men where you have a large number from which to choose. The reverse is almost if not quite impossible. We have had practically no failures among the teachers.

Cooperative education in some form is the right plan. The details of the system will of course vary with each locality but the most successful teaching is done where and when the student interest is the highest and this interest is highest in the affairs of daily life, hence the school must exist in an atmosphere of real life and not in an artificial atmosphere.

In all of our training work our first interest is in the development of the very best that is in each student, remembering that he is entitled to the very best life that he is able to make. We must therefore not only train men to be efficient in their specialties but must provide an environment throughout industry that will give them abundant opportunity to progress to higher positions as they prove able. Study and work belong together in life, therefore, why not start them together early and encourage each one to keep at both until the very end of his life—this is cooperative education. Such a man is eternally happy in his growing and growing happy men and women mean a growing efficient organization.

INDUSTRIAL EDUCATION.

Hugo Diemer, Professor of Mechanical Engineering, State College, Pa.:

Anyone desiring to see excellent work in industrial education should see some of the educational activities as carried on at the Westinghouse Electric Company. Mr. Dooley has certainly done considerably more than scratch the surface. He named a most important point when he touched on the right kind of instructors. Fortunately in the large corporations, where there is a goodly number of well-trained enthusiastic men to choose from, the teaching in a night school or continuation school on the part of employees is often a matter of voluntary service. Usually this means that the teacher is enthusiastic. He is not teaching primarily in order to earn a little extra money. He teaches because he wants to teach, and I think that is why we have such excellent results in some of our corporation schools.

The types of industrial education in which the gentlemen and ladies that are at this convention will probably be most interested, are those which aim to better the industrial intelligence of the young people who have recently entered mechanical occupations, as well as of those who are planning to enter these occupations. These educational activities include (a) day-time continuation schools and apprentice schools; (b) vocational night schools; (c) the correlation of industrial training with the general studies already taught in existing public schools.

So far as continuation schools are concerned, it is worth noting that in several states we have laws regulating the education of young people who are employed in industry between the ages of fourteen and eighteen. In states where such regulation exists it is customary to prescribe a certain amount of cultural work, usually in civics, to accompany technical instruction relating to the industry in which they are employed.

The next class of industrial education which I mentioned is the vocational night school, of which Mr. Dooley has told you. The number of these night schools has rapidly increased in Pennsylvania during the last year owing to the act of our last Legislature whereby the State assists local communities in introducing vocational classes, by paying two-thirds of the salary of instructors who meet the approval of the State Board of Education.

Important as these vocational classes are, it seems to me that the type of industrial education in which we ought all to be most interested is that which aims to correlate industrial intelligence with all of the already existing subjects taught in the primary schools. This correlation means a great deal more to the community as a whole than the work inside of a corporation in the training of the employees of that corporation.

My own ideas of industrial education, like Mr. Dooley's, are influenced somewhat by my having been an employee of the Westinghouse Electric Company myself, and later having been a superintendent and works manager of other companies. Shortly after completing my college education I acted as an instructor in night classes for some years in Y. M. C. A. extension work. My experience in this and other extension work has convinced me that in our public schools we make a great mistake when we discontinue industrial work when the child leaves the kindergarten. During the kindergarten age, our children are read to and told stories about how paper is made, how cotton goods are made, etc., and then we leave off these subjects and spend seven years more or less on the three R's. Possibly later there may be a technical high school or a commercial high school. Meanwhile the child is not taught anything in the public school about the things that are going on all around him in the works in which the community is interested.

As far as the grade teaching of the child is concerned, it is one of the aims of my department at the Pennsylvania State College, in co-operation with the State Board of Education, to help this correlation all that we can. To this end we are preparing definite, explicit instructions for teachers, giving detailed instructions as to how to correlate industrial and manual arts work with the agricultural work and the three R's work in the schools. Of course, it is always necessary to have a school board and teachers willing to undertake the work, but with that willingness as a start we can make good progress.

Now to go a little further with regard to the industrial work which we are doing at the Pennsylvania State College:—As you know, one of the fundamental aims of our Land Grant Colleges is the furtherance of education in the mechanic arts and industries. Now that does not mean that we are to teach only the higher mathematical technology of engineering. Ex-Governor Beaver was very anxious that we should correlate industrial management, engineering economics, and the educational phases of engineering and industry with our technical teaching. With these aims in view we have three subdivisions of the Industrial Engineering Department at State College, namely: (1) Practical Mechanics; (2) Industrial Management;

(3) Industrial Education. The work in group (1) Practical Mechanics, includes the teaching of the fundamental industrial processes, including foundry, forge-shop, machine-shop, pattern-making, cabinet-work, etc. The work in this group is neither manual arts nor trades-school work, but includes exercises, experiments and tests relating to processes carried on in modern industries, the cost in power, materials, and labor, of carrying on the processes in different ways.

In Group 2, Industrial Management, we teach the fundamental principles of industrial economics underlying factory organization and administration, theory of industrial accounts including the correlation of production and cost records with the double entry general accounting system, safety and welfare work and practicum work in making of time and motion studies, instruction, cards, routing, tool lists, bulletining order of work, also factory lay-out and design. We have had calls from many industries for men trained in these branches in addition to the fundamental mathematics and mechanics common to all engineering work.

In Group 3, Industrial Education, we have made considerable progress in our summer session for teachers. Five years ago we had four men, four years ago, six, three years ago, twelve, two years ago sixteen, and last summer, thirty-seven in our summer session training courses for teachers of vocational and industrial education and manual arts. Most of these summer school attendants have been men with trade experience, pattern-makers, carpenters, machinists and draftsmen who wished to add to their trade training fundamentals of the theory and practice of teaching industrial branches.

After the immediate need for industrial teachers has been met largely through our summer school courses, we hope to have a larger number of men with trade experience take our full four years collegiate course for teachers of industrial education and manual arts.

The correlation of industrial work with the required work of the grade schools is aided by the Pennsylvania State College by our assigning to extension work a member of my department who can be called on to address teachers' institutes, parent-teachers' clubs, civic clubs, and similar organizations to show what has been done along these lines in various communities. Another phase of industrial education in which we are interested is the subject of vocational guidance and the making of industrial surveys. The members of my department will be glad to assist any community in this work. Our idea of vocational guidance is that in the lower grades, the teacher should endeavor to find out the kind of activities for which each child is best adapted. We do not mean that the child should be, at a tender age or even later, condemned to perpetually serve at a calling selected for him by others, since we believe that young peoples'

capacities do change. We believe that a local industrial survey will point out the local industrial opportunities.

Industry is of two general classes so far as industrial surveys and vocational guidance are concerned. There is a certain list of occupations which prevail everywhere, and there is another list local to a given community. We advocate the correlation of industrial work relating to the general as well as to the local occupations, with the three R's. There is just as much interesting material to be found in shop and industrial arithmetic as in the existing problems. There is just as good reading and writing material colored by industrial data as is found in existing exercises in reading and writing. Industrial and commercial geography are as attractive as present-style geography. Industrial history is as inspiring as history of political events and great warriors.

Our whole scheme of industrial education should afford the opportunity for every class of people irrespective of age or prior school training to advance and develop to the highest degree of industrial efficiency of which they are capable. As an example of what is possible I shall cite an instance that I saw at the apprentice school of the General Electric Company at Lynn, Mass. I met a laborer who had reached nearly forty years of age, and had then taken the apprentice course and had developed into a first-class machinist. This is but a single example of what I mean. Our training must aim to give every man an opportunity to develop to increased efficiency and to demand higher wages, and that is after all what America aims to stand for industrially,—the highest individual personal efficiency coupled with the highest wages paid in the world.

The meeting adjourned at 4.30 o'clock P. M.

(Proceedings of the Conference will be continued in the July Bulletin).

Vol. 2 No. 7

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

JULY, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P Wood, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Feehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

The Attorney of the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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ABSTRACT OF THE PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

INTRODUCTION.

The Pennsylvania Workmen's Compensation Law was passed in a series of seven acts by the 1915 Session of the Legislature and signed by the Governor on June 7th, 1915.

These seven acts are: a Workmen's Compensation Act; an Act creating a Bureau in the Department of Labor and Industry to enforce the Compensation Act; a Supplement to the Compensation Act, exempting employees in farm labor and domestic service from the provisions of the Compensation Act; an Act regulating policies issued by casualty companies; an Act creating the State Insurance Fund; an Act providing for the creation of mutual liability insurance associations; and a proposed amendment to the Constitution authorizing compulsory compensation.

The compensation as provided by this series of laws is elective as to private employers but as to State, County and Municipal governing bodies, it is compulsory. It is elective from a standpoint of all employees. Compensation is presumed to be elected unless definite rejection is signified. The defenses of assumption of risk, negligence of fellow employees and contributary negligence, except for intoxication or reckless indifference to danger, are removed. The burden of proof of intoxication or reckless indifference to danger is placed upon the employer.

Employers electing to come under the Act are to pay compensation prescribed by the Act. Those not electing to come under the Act are liable to civil suits for damages.

The scale of compensation provided is fifty per cent of the wages, with a maximum of ten dollars per week and a minimum of five dollars per week. Commutation of payment is not allowed, except in certain prescribed cases.

The enforcement of the Act is provided for in a Workmen's Compensation Board, with a Bureau in the Department of Labor and Industry and referees located at various points in the State.

Employers may insure in a casualty company, a mutual liability insurance company, in the State Fund, or if approved by the Board, may carry their own insurance.

The following abstract of these laws is presented in order that interested persons may become familiar with the general provisions of the law and the method of procedure to be carried out in its enforcement. The laws, themselves should be consulted in disputed cases or cases where exact information in regard to any point is desired. Reference should be made to the wording of the laws rather than to the wording of the abstract, as it is exceedingly difficult to formulate a digest which includes all the provisions of the laws themselves. Copies of the laws can be obtained by applying to the Department of Labor and Industry, Harrisburg. With this explanation the following abstract is presented.

GENERAL PROVISIONS.

The new Compensation Law provides a means of certain, definite and immediate compensation for injuries to employees, instead of the uncertainty and delay which existed under the previous method of recovering damages by civil suit. The law is what is known as an elective compensation law, in that neither employers nor employees are compelled to accept its provisions and in case either desires to take his chances by carrying damage suits to court, he may do so by giving written notice to the other party that he rejects the provisions of the Compensation Law. A copy of this notice of rejection must be filed with the Compensation Bureau of the Department of Labor and Industry.

This notice of rejection must be made before an accident occurs. After the accident has actually happened the method previously accepted must be followed. Where neither the employer nor employee has, in writing, rejected the Compensation Law, it is presumed that he has accepted its provisions.

Where the provisions of the Compensation Law have been rejected by either employer or employee, the new law provides certain changes in the defenses which the employer may advance in his behalf. The defense that the employee has accepted the risks of the work or that the accident was caused by the carelessness of a fellow employee can no longer be advanced. The defense that the accident was caused by the negligence of the injured employee is removed, unless it is based on the fact that the employee was intoxicated or recklessly indifferent to danger, and in either case, the intoxication or indifference to danger must be proved by the defendant.

The term "employee" as used in the Compensation Law includes every one working for wages or salary, except those engaged in domestic service and farm labor and except those whose employment is casual and not in the regular business of the employer or those who do home work, such as sewing, stripping tobacco, etc., where the

work is done away from the premises of the employer. The exception of those who are not engaged in the regular business of the employer, from the provision of the Law, is intended to include such cases as those who are engaged merely temporarily at work which is not connected with the actual business of the employer, as for example: A householder engages a contracting plumber to do work about his house. In case an injury occurs to one of the employees of this plumber, compensation would be sought from the master plumber rather than from the householder, as the work was not in the regular business of the latter.

Compensation is provided for all accidents occurring in the State of Pennsylvania whether the contract for hiring and the offices of the employer are within the State or not. All injuries occurring "in the course of employment" are subject to compensation, except those caused by a third person for personal reasons. The Law is so drawn as to exclude compensation for industrial diseases.

AMOUNT OF COMPENSATION.

TOTAL DISABILITY.—The amount of compensation which must be paid in case of an injury depends upon the employee's wages. For total disability fifty per cent of the wages must be paid for varying lengths of time, with the provisions that ten dollars a week is the maximum and five dollars a week the minimum compensation payment. In case the injured employee receives less than five dollars a week, he must be paid full wages for the time lost. Compensation for total disability must be paid for the first five hundred weeks after the fourteenth day but the total amount paid for such injuries shall not exceed four thousand dollars.

PARTIAL DISABILITY.—For partial disability, which means that the injured person can do some classes of work (although not able to return to his regular employment) the compensation is fifty per cent of the difference between the wages received before the injury and those received after he returns to work. Compensation for partial disability must be paid for the first three hundred weeks after the fourteenth day of such disability.

PERMANENT INJURY.—The compensation is provided on the basis of fifty per cent of the wages, for different lengths of time, for a number of specified permanent injuries. These are as follows:

The loss of a hand—175 weeks.

The loss of an arm—215 weeks.

The loss of a foot—150 weeks.

The loss of a leg—215 weeks.

The loss of an eye—125 weeks.

Loss of two or more of such members, the sum of the periods given for each.

Amputation between the elbow and wrist is considered the loss of a hand and between the knee and ankle is considered the loss of a foot. Amputation at or above the elbow is considered the loss of an arm, at or above the knee, the loss of a leg.

The permanent loss of the use of a hand, arm, foot, leg or eye is considered as the loss of such member.

FATAL INJURIES.—The compensation payable in case of death varies with the number of dependents and must be paid for a period of three hundred weeks, except where young children are receiving compensation. In case a child receiving compensation is under sixteen years of age at the end of three hundred weeks, the payments are to be continued until the child has reached the age of sixteen.

Compensation is provided for the different classes of dependents according to the law, as follows:

"1. To the child or children if there be no widow nor widower entitled to compensation, twenty-five per centum of wages of deceased with ten per centum additional for each child in excess of two, with a maximum of sixty per centum, to be paid to their guardian.

"2. To the widow or widower if there be no children, forty per centum of wages.

"3. To the widow or widower if there be one child, forty-five per centum of wages.

"4. To the widow or widower if there be two children, fifty per centum of wages.

"5. To the widow or widower if there be three children, fifty-five per centum of wages.

"6. To the widow or widower if there be four or more children, sixty per centum of wages.

"7. If there be neither widow, widower nor children, then to the father and mother or the survivor of them, if dependent to any extent upon the employee for support at the time of his death, twenty per centum of wages.

"8. If there be neither widow, widower, children nor dependent parent, then to the brothers and sisters if actually dependent to any extent upon the decedent for support at the time of his death, fifteen per centum of wages for one brother or sister, and five per centum additional for each additional brother or sister, with a maximum of twenty-five per centum, such compensation to be paid to their guardian.

"9. Whether or not there be dependents as aforesaid, the reasonable expenses of the last sickness and burial, not exceeding one hundred dollars (without deduction of any amounts theretofore paid for compensation or for medical expenses) payable to the dependents, or if there be no dependents, then to the personal representatives of the deceased.

"Compensation shall be payable under this section to or on account of any child, brother or sister, only if and while such child, brother and sister is under the age of sixteen. No compensation shall be payable under this section to a widow unless she was living with her deceased husband at the time of his death or was then actually dependent upon him for support. No compensation shall be payable under this section to a widower unless he be incapable of self- support at the time of his wife's death and be at such time dependent upon her for support. The terms 'child' and 'children' shall include step-children and adopted children and children to whom he stood in loco parentis, if members of decedent's household at the time of his death, and shall include posthumous children. Should any dependent of a deceased employee die or should the widow or widower remarry or should the widower become capable of self-support the right of such dependent or such widow or widower to compensation under this section shall cease. If the compensation payable under this section to any person shall for any cause cease, the compensation of the remaining persons entitled thereunder, shall thereafter be the same as would have been payable to them had they been the only persons entitled to compensation at the time of the death of the deceased.

"The wages upon which death compensation shall be based shall not in any case be taken to exceed twenty dollars per week nor be less than ten dollars per week."

Alien dependents, if living in the United States, receive the same amount of death compensation as citizens of the United States, but a distinction is made for aliens not residing in the United States. In this case dependent widows and children receive two-thirds of the amount provided for residents, and alien widowers, parents, brothers and sisters are not entitled to any compensation. Compensation due non-resident aliens may be paid to their Consular Officer for proper distribution.

GENERAL.

In calculating the wages upon which compensation is to be based, the actual "money rate" is to be taken except that where occupations vary with the seasons or depend upon the weather, one-fiftieth of the wages received during the year preceding the accident is to be taken. In exceptional cases, where this one-fiftieth is shown not fairly to represent the average wages paid to the injured employee, a different period may be taken. In case the injured person is working for two employers, the compensation is to be paid by the one for whom he may be working when injured, and the wages are to be considered as though his entire earnings were received from this employer.

Compensation must, for all kinds of injuries, be paid in the same periodical installments as the wages of the employee were payable before the accident, that is, if the wages were paid weekly, compensation must be paid weekly. The only cases in which the compensation may be paid in a "lump sum" are those in which the payment is to alien non-resident dependents or in the following special cases:

When undue expense or hardship may be avoided.

When the person receiving compensation has moved or is about to move from the United States.

When the employer is going out of business.

Aside from the compensation based on fifty per cent of the injured employee's wages for various numbers of weeks, the employer must also furnish reasonable medical attention during the first two weeks of a disability. The cost of this attention which can be demanded by an employee, is twenty-five dollars unless a major surgical operation is necessary, in which case the maximum is seventy-five dollars. In case the employee refuses this medical attention when offered by the employer, he risks losing future compensation, if it can be shown that the time of disability was increased by the refusal of the medical attention.

The employer also has the right to have a physician examine the injured workman at any time after the injury occurs and the employee must allow himself to be examined by the employer's physician or he gives up a right to future compensation. In case he so desires, the employee may have his own physician present at this examination.

ADMINISTRATION.

The Workmen's Compensation Board, composed of three members appointed by the Governor, has charge of the enforcement of the Compensation laws. The principal assistants of the Board are ten referees who are assigned to definite districts throughout the State. In addition to the referees, there is provided in the Department of Labor and Industry a Compensation Bureau which will be under the supervision of the Board.

The Board has not only executive authority in enforcing the laws but it also has judicial authority and holds hearings and interprets the law in disputed cases which are appealed to it from the referees.

Certain classes of hearings, such as for commutation of payments and a few others, come directly before the Board without passing through the referees' hands.

The Bureau has three main divisions, each under the head of a chief clerk. These divisions are for:

1. Filing and docketing.
2. Comparing agreements.
3. Handling petitions, appeals, etc.

The referees are empowered to hear all disputed compensation cases, subpoena witnesses and submit their findings to the Board. It is the intention that these referees be assigned to definite districts and hold hearings on disputed cases at various points throughout their districts. In this way cases can be heard in the locality in which the accident occurred. The hearings before the referees are to be public and conducted with as little formality as possible. It is expected that the referee will be able to arrive at the facts of the case and determine the proper compensation, without the necessity of either party being represented by attorneys. In the event that either party is dissatisfied with the decision of the referee, the case may be appealed to the Board. If the appeal is taken on the ground that the referee has not correctly interpreted the law, the Board will review the case. If the appeal is based on the referee's findings of fact, the Board may or may not hold a rehearing depending upon its judgment of the matter.

PROCEDURE.

Within two weeks of the occurrence of an accident the employee must, in writing, notify the employer of the accident unless the employer already has knowledge of its occurrence. This notice must inform the employer that a certain employee, by name, received an injury, the character of which is described in ordinary language, in the course of his employment on or about a time specified, and at or near a place specified. That is, it must contain the name of the employee, the nature of the injury and the time and place of its occurrence. Except in extreme cases, compensation cannot be collected unless the employer knows of the injury or has received this notice.

The employer must report accidents to the Division of Accident Reports of the Department of Labor and Industry as heretofore. Fatal and serious accidents must be reported within twenty-four hours and minor accidents within thirty days. If the employer is a subscriber to the State Insurance Fund, he must within seven days, either make this report to the Department of Labor and Industry or else report the accident to the Insurance Board. A copy of the notice of the employee will serve as the report to the Insurance Board.

After an accident occurs, the employer and employee should agree to the amount of compensation which should be paid. This agreement is not binding if made within two weeks of the time of the injury, and is not binding if it permits of the payment of compensation in one sum, nor if it permits of the payment of compensation other than that specified in the Law. When the employer and employee have at the end of two weeks agreed upon the compensation due, a written copy of this agreement, signed by both parties must be filed with the Compensation Board and is then part of their records. In case it is impossible for the two parties to agree on the amount of compensation, the following procedure is to be followed:

The employee is to present a claim to the Workmen's Compensation Bureau of the Department of Labor and Industry, stating when and how the accident occurred and the extent of the injuries received. A copy of this claim will be sent to the employer and also to the referee in whose district the accident occurred. Before the referee holds a hearing in the case, the employer may, in writing, answer the claims of the petition. Any statements in the petition not contradicted in this answer are assumed to be agreed to and will not be taken up by the referee. The hearing will be devoted to settling the disputed points.

The referee, at the hearing before him, may subpoena any witnesses he thinks necessary and may investigate through physicians or other experts, the physical condition of the injured person and the circumstances under which the accident occurred. The referee, after making a thorough investigation into the cause and extent of the injuries, decides as to whether or not compensation is payable and, if payable, the amount. This decision is reported to the Compensation Bureau and is binding upon both employer and employee, unless an appeal be taken.

The Law makes an award of compensation a preferred lien against the employer on the same legal standing with unpaid wages. The employee may file with the prothonotary of a county court, a certified copy of the agreement between himself and the employer or a copy of the claim which he has presented to the Compensation Board. These agreements or awards when so filed stand as a preferred claim against the employer until satisfied. The employer, by filing with the prothonotary, certified receipts of compensation paid will reduce the lien by such amounts until it has been entirely satisfied.

In case the amount of compensation is definitely known, as for instance, in a death claim, the employer can, by paying the proper amount to a trust company, or other authorities, have future payment made for him by them.

METHODS OF INSURANCE.

The Compensation Law provides that all employers shall insure their liability in one of the following four ways:

1. By carrying their own insurance,
2. By insuring in a casualty company,
3. By insuring in a mutual liability association,
4. By insuring in the State Fund.

In case the employer does not insure by one of these four methods, the Bureau will notify him to do so at once and if within thirty days he has not complied with this notice, he is liable to the employee in the case of an accident, either for compensation as provided in this Law or for damages by court action as the employee shall elect. This is the only case in which an injured employee can make such a selection after an accident has occurred.

In order to carry his own insurance, an employer must make application to the Compensation Bureau which, if satisfied of his financial ability to pay such compensation, will grant him this right. In this case, the Bureau may from time to time require further statements from the employer and may revoke the right of self insurance, if at any time the employer is apparently unable to carry his own insurance. In this case, the employer must at once take out insurance in one of the other three ways, or must give written notice to his employees and to the Bureau that he has rejected the provisions of the Compensation Act.

The organization of Employers' Mutual Liability Insurance Associations is provided for in a special act. This act permits twenty or more employers who have a total of five thousand or more employees in Pennsylvania and who are working under the provisions of the Compensation Act, to incorporate into a Mutual Association, except that if the association insures only employers engaged in agriculture, the minimum number of employers is two hundred and the minimum number of employees is five hundred. These associations may insure their incorporating members and new subscribers. They may fix the rates to be paid, inspect the property of their members and conduct a general liability insurance business under the supervision of the Commissioner of Insurance.

Any employer working under this Compensation Law may insure his risk with the State Insurance Fund which is under the supervision of a Board composed of the Commissioner of Labor and Industry, the Commissioner of Insurance and the State Treasurer. The State Treasurer is the custodian of the Fund and all payments from it are made through him. The Fund in reality is a Mutual Insurance Company conducted by the State with power to fix rates, make in-

spections and conduct the regular business of a mutual liability company. The liability of the State for payments is limited to the amounts paid into the Fund as premiums and other State money cannot be used for this purpose.

PROCEDURE REQUIRED OF AN EMPLOYER BY THE PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

I. To accept the compensation features of the law an employer must insure in

(a) A liability company,
(b) A mutual company,
(c) The State Insurance Fund, or
(d) Carry his own insurance.

To carry his own insurance, an employer must apply to Compensation Bureau for the privilege and satisfy them of his financial ability.

II. To reject the compensation features of the law an employer must

(a) Give written notice to his employees that he is not liable for compensation under the law.
(b) File certified copy of this notice with Compensation Bureau within ten days.

Note: In this case the employer is liable for damages by legal action, with the following defenses removed:

(1) Negligence of fellow employee,
(2) Employee had assumed the risk of injury,
(3) Negligence of injured employee unless the employer can prove,
  (a) Intoxication,
  (b) Reckless indifference to danger.

III. If an employer neither insures his liability nor rejects the compensation features of the law, he is liable either for compensation, or damages by law as the employee may elect.

CLASSES OF EMPLOYEES FOR WHICH EMPLOYER IS NOT LIABLE FOR COMPENSATION UNDER THE PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

Classes of employees excluded:

I. Agricultural workers.
II. Domestic servants.
III. Employees whose work is casual in character and not in the regular course of the business of the employer.
IV. "Home workers."

CONDITIONS UNDER WHICH AN INJURED EMPLOYEE IS ENTITLED TO COMPENSATION UNDER THE PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

Injured Person—An employee in the course of his employment.

Time—After December 31st, 1915.

Place—Any place within State of Pennsylvania where employee must be on account of the nature of his work.

Cause—An accident.

1. Not self-inflicted.
2. Not caused by a third person for personal reasons.

Extent of Injury—Disability of less than fifteen days is not entitled to compensation.

PROCEDURE OF EMPLOYER AND EMPLOYEE FOLLOWING AN ACCIDENT AS PROVIDED BY THE PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

I. Notice of accident by employee to employer.
   A. Within 14 days of accident, employee must in writing notify employer of injury unless employer has this knowledge.

II Report of accident by employer to State authorities.

A. Employer must report accident to Department of Labor and Industry within 24 hours, if it is fatal or serious, and within 30 days if it is a minor accident.

B. If employer is subscriber to State Insurance Fund, he must, within seven days, report accident to Insurance Board or to Department of Labor and Industry, as under "A".

III. Method of determining amount of compensation due.

A. Agreement between employer and employee.

1. Employer and employee may in writing agree on compensation due.

(a) This agreement must *not*

1. Be made before fourteenth day after accident.
2. Permit of "lump sum" payments.
3. Vary from the provisions of the law as to amount to be paid, or period during which compensation is payable.

(b) Certified copy of this agreement must be filed with Compensation Board.

B. Agreement between employer and employee that compensation is due, but disagreement as to amount.

1. Petition Compensation Board to determine compensation payable.

(a) Board will hold hearing and grant or disallow compensation.

C. Disagreement between employer and employee.

1. Employee may present claim for compensation to Compensation Board.

(a) Certified copy of claim sent to employer.

1. Within seven days, employer may deny any statements made in claim.
2. Statements not denied will be considered as agreed to and will not be argued at any hearing.

(b) Certified copy of claim sent to proper Referee.

1. Referee notifies both parties of time and place of hearing which must be not less than twelve, nor more than twenty-one days after filing claim.

(c) Referee holds hearing and, if necessary, makes investigation by appointing physicians to examine the injuries of employee, and experts to ascertain other facts.

(d) Referee gives decision, either granting or disallowing compensation.

2. Either Party may appeal to Board from Referee's decision on the ground that
   (a) The decision was not in accordance with the law.
      1. Board will hold hearing and sustain, modify or reverse Referee's decision.
   (b) The decision was unwarranted by the evidence.
      1. Board may grant new hearing.
      2. Board may sustain Referee without new hearing.
   (c) The decision was influenced by fraud, coercion, or other improper conduct on part of any one.
      1. Board may grant new hearing.
      2. Board may sustain Referee without new hearing.
3. Either party may appeal to court of common pleas from decision of Board on matters of law.

AMOUNT OF COMPENSATION PROVIDED BY PENNSYLVANIA WORKMEN'S COMPENSATION LAWS.

I. Non-Fatal Injuries.
   A. For first 14 days disability, the employer must furnish reasonable medical services, not to exceed $25.00, unless a major surgical operation is necessary, when $75.00 is the maximum.
   B. After first 14 days, compensation is payable as follows:
      1. Total disability,
         (a) Rate—50%of wages.
            1. Compensation not to exceed $10.00 per week.
            2. Compensation not to be less than $5.00 per week.
            3. If wages of injured are less than $5.00 per week, full wages are to be paid.
         (b) Time—500 weeks after 14th day, unless total disability terminates in meantime.
            1. If total disability follows partial disability, the 500 weeks are to be reduced by the number of weeks during which compensation was paid for partial disability.
         (c) Total amount of compensation not to exceed $4,000.
      2. Partial disability (except for particular cases under "3").
         (a) Rate—50% of difference between wages of injured employee and his earning power after injury.
            1. Compensation not to exceed $10.00 per week.

(b) Time—300 weeks after 14th day unless partial disability terminates in meantime.

1. If partial disability follows total disability the 300 weeks are to be reduced by the number of weeks during which compensation was paid for total disability.

3. Permanent Injuries.

(a) Rate—50% of wages.

1. Compensation not to exceed $10.00 per week.
2. Compensation not to be less than $5.00 per week unless wages of injured are less than $5.00 per week, in which case full wages are to be paid.

(b) Time for the loss of a

1. Hand—175 weeks.
2. Arm—215 weeks.
3. Foot—150 weeks.
4. Leg—215 weeks.
5. Eye—125 weeks.
6. Any two such members (not constituting total disability) sum of periods for each.
7. Loss of both hands, both arms, both feet, both legs, or both eyes is to be compensated the same as total disability.

II. Fatal Injuries.

A. Amount of compensation to dependents.

1. Residents of the United States.

(a) Rate per week.

1. Limits.

(a) Maximum wages to be taken to be $20.00 per week.

(b) Minimum wages to be taken to be $10.00 per week.

2. Part of wages to be paid as compensation.

(a) To the child or children, if there be no widow nor widower entitled to compensation, twenty-five per centum of wages of deceased, with ten per centum additional for each child in excess of two, with a maximum of sixty per centum, to be paid to their guardian.

(b) To the widow or widower, if there be no children, forty per centum of wages.

(c) To the widow or widower, if there be one child, forty-five per centum of wages.

(d) To the widow or widower, if there be two children, fifty per centum of wages.

(e) To the widow or widower, if there be three children, fifty-five per centum of wages.

(f) To the widow or widower, if there be four or more children, sixty per centum of wages.

(g) If there be neither widow, widower, nor children, then to the father and mother, or the survivor of them, if dependent to any extent upon the employee for support at the time of his death, twenty per centum of wages.

(h) If there be neither widow, widower, children, nor dependent parent, then to the brothers and sisters, if actually dependent to any extent upon the decedent for support at the time of his death, fifteen per centum of wages for one brother or sister, and five per centum additional for each additional brother or sister, with a maximum of twenty-five per centum; such compensation to be paid to their guardian.

(b) Time during which compensation is payable is 300 weeks, except that if a child receiving compensation is under sixteen years of age, at the end of the 300 weeks, payments shall continue until the child is sixteen.

2. Non-residents of the United States.

(a) Amount of Compensation.

1. Widows and children to receive two-thirds the amount provided for residents.

2. Widowers, parents, brothers, and sisters not entitled to compensation.

(b) Method of payment.

1. Future installements may be commuted at any time.

2. Consular officers may represent non-resident alien dependents.

B. Last sickness and burial expenses, not to exceed $100.00, shall be paid in all fatal cases regardless of whether or not there are dependents.

EMPLOYEES' MUTUAL RELIEF ASSOCIATIONS.

For many years there have been in operation, in a large number of industries, systems by which employees receive aid in times of need. These benefits vary for different conditions, ranging from death of the employee by accident in the performance of his duties about the plant, through disability caused by accident or sickness, to death of a member of the employee's family. The Workmen's Compensation Law, enacted at the last session of the Pennsylvania State Legislature and which goes into effect January 1st, 1916, relieves the employee of any further necessity for contributing to a fund destined to render assistance to his dependents or to himself in the event of his death or of disability resulting from an accident occurring in the course of his accustomed employment. As this, however, does not cover disability or death from other causes, employees' benefit associations will continue to fill a very important place in the life of the average workman.

With the object of offering assistance to any body of employees having in view the formation of such a system, the Division of Industrial Hygiene of the Department of Labor and Industry offers to the public, a specimen set of by-laws which can be adapted to the needs of any body organized for the mutual relief of its members.

Before submitting this plan, there was made a study of relief and benefit associations in existence in connection with a large number of public service, industrial and mercantile establishments. These organizations naturally differed widely in numerous points. Some were supported and controlled by the employees exclusively, some by the employers and others by both. In the same way, the dues varied, several companies giving assistance from a fund supported by the company without any contributions from the employees. In most instances, however, the dues were paid by the members and varied with the amount and kind of benefits received for disability or death. Valuable points were obtained from all of the systems studied, but special acknowledgment is here made to the Dodge Mutual Relief Association, the Westinghouse Electric & Manufacturing Company Relief Department, The Pennsylvania Railroad Voluntary Relief Department and the Dives, Pomeroy & Stewart Relief Association, for the help rendered by the study of the regulations of their organizations as the specimen by-laws submitted are copied almost entirely from various sections of the forms governing one or the other of these bodies.

It was thought best to include in this plan an annual distribution to the members, of the surplus remaining over and above a certain sum

named as a reserve. By this means every member receives some benefit from the money he contributes, and does not run the risk of paying dues into the association for years and then at the termination of his employment, either voluntary or otherwise, receiving no benefits from his contributions.

Death benefits are not included in the scheme submitted. The size of the reserve for such a purpose and the method of providing it must necessarily vary so greatly with the size of the association that it was thought best to allow any body of employees wishing this condition included in their regulations, to fix the dues and the benefits as best suited their own needs. This may be accomplished in one of several ways: The annual distribution may be dropped and any surplus accumulated by this means may go to create a reserve fund for death benefits; the dues may be increased in order to produce a fund of a size sufficient to allow for the safe withdrawal of the larger sum required by a system including death benefits; the third choice is to have no stipulated sum to be paid for death benefits but on the death of a member, to levy an assessment on the surviving members, the whole amount of which is turned over to his dependents. Such assessments may be a certain flat rate for each member, or it may be made to vary proportionately with the dues paid by the members for sick benefits.

In the past, relief associations in industrial and public service corporations have paid out greater benefits for disability as the result of accident, than have mercantile establishments. Because the Compensation Law will in the future provide for the relief of disability from these greater hazards, the dues suggested in the specimen by-laws are the same as those in use by a benefit association in a mercantile establishment. This association has a membership of approximately two hundred individuals and has been in very successful operation for more than ten years. For an association having a very much smaller number of members, the dues could be determined in one of two ways: Either the dues could be made considerably higher or they could remain as given in the specimen by-laws with the stipulation that assessments necessary to meet all expenses should be levied as needed; then after the course of several years the dues could be fixed at sums which the experience of the individual society had found most nearly to correspond with its needs. It is strongly recommended, however, that no relief organization be attempted unless there is a reasonable belief that a membership of at least twenty-five individuals will be maintained.

SPECIMEN BY-LAWS FOR AN EMPLOYEES' MUTUAL RELIEF ASSOCIATION.

ARTICLE I.

Section 1. The name of the association shall be ..... Mutual Relief Association.

ARTICLE II.

Section 1. The object of this association shall be to secure, at a minimum cost, the mutual relief of members in cases arising from accident, sickness and quarantine among employees of the ....Company; except that disability resulting from an accident occurring while a member is performing the duties of an employee of the Company shall not be included.

ARTICLE III.

MEMBERSHIP.

Section 1. Any employee after having been employed by ....Company for two months is eligible for membership, subject to the by-laws which are now or later may be adopted.

Section 2. Each new employee shall receive from the secretary, within one month after employment, a letter reading as follows:

.....Mutual Relief Association.

Mr. ..... Check No.....

You are cordially invited to join the.....Mutual Relief Association, managed by your fellow employees for their mutual benefit, as you will see from the enclosed copy of by-laws.

It is taken for granted that you desire to avail yourself of the privileges of this organization.

If you join within four months after the beginning of your employment by the Company, you save one-half of the membership fee, so for that reason if you so desire, I shall file with the Directors an application for membership for you.

Yours for self protection,

.....

Secretary.

Section 3. The Secretary shall also fill out part of the following application blank, inserting the employee's name in the blank at top and such other information as he may have available.

Application for Membership.

.....Mutual Relief Association.

To the Board of Directors of .....Mutual Relief Association:

No. ..... Date .....19.....

I, ... am an employee of the ..... at ..... My check number is ..... and I hereby apply for membership in .....Mutual Relief Association for benefits of $..... per day temporary disability. I have carefully read the by-laws and agree to comply with and be bound by them.

I reside at No .....St., in the city of ..... County of ..... State of .....

I certify that I am temperate in my habits, and to the best of my knowledge and belief, have no injury or disease, constitutional or otherwise, except as stated below:

.....

.....

.....

I agree that any untrue or fraudulent statement, made to the medical examiner, or any willful concealment of facts in this application or elsewhere, will forfeit my membership in the said association, and all rights, benefits and equities arising therefrom.

Sign here .....

Recommended by ..... { Members of ..... Mutual Relief Association.

Application approved ..... 19..... by the Board of Directors.

.....Secretary.

Section 4. In the event that members desire to avail themselves of additional benefits, they may do so subject to the provisions of the by-laws, upon notice to the Secretary.

Section 5. Connection with the Association shall terminate when the member ceases to be employed by the ..... Company, or when suspended or expelled by order of the Directors, in accordance with the by-laws, or upon resignation filed with the Secretary, except that where a member shall be temporarily laid off by the ..... Company, such action shall be held subject to the discretion of the Directors not to terminate the

membership until twenty-six weeks have elapsed, provided dues are handed regularly to the Secretary without solicitation.

Section 6. Any employee who involuntarily withdraws from the Association, may be reinstated at the discretion of the Directors, but will be required to be examined again by the physician and to pay all old accounts against him on the books of the Association, unless excused by the consent of the Board of Directors.

Section 7. Any employee voluntarily leaving the Association, is again eligible for membership on the same basis as any other employee, but must pay up any old accounts against him unless excused by the Directors.

Section 8. Membership shall date from the time of payment of first dues of applicants and shall terminate with the expiration of the time covered by the last dues paid.

Section 9. In case that it shall be found that an applicant has a chronic or other ailment which would decrease the desirability of the applicant as a member, the applicant may, by a majority vote of the Board of Directors, be admitted to membership by exempting the Association from liability for such ailments or from liability due to ailments for which such conditions shall be responsible.

Section 10. All applications will first be acted upon by the Board of Directors, and applicants favorably received will take a medical examination at the expense of the Association, and under the direction of the Board.

Section 11. Admission to membership will depend upon the decision of the Board following the medical examination.

Section 12. The Board of Directors have the right to reject or withhold decision on any applications which appear to them liable to work contrary to the interests of the Association.

Section 13. Members shall receive benefits for temporary disability.

Section 14. Dues of all members are to be paid within two days after each pay day of the Company.

Section 15. Any member in arrears shall not be allowed to take part in the meetings of the Association, nor be entitled to benefits, and such suspension shall continue four weeks after restoration to good standing. Any member who fails to pay his dues during four successive weeks will be consider in arrears.

Section 16. If it shall be known that a member becomes habitually intoxicated, or is subject to any disability, brought on by his own neglect, misconduct or vice, or if it shall be known that he has falsified in his application for membership, or has endeavored to defraud or injure the Association in any way, he may be deprived of benefits or suspended or expelled as the Directors shall decide.

Section 17. Members conducting themselves in a way to retard recovery of health, shall forfeit all benefits from disability so affected. This includes drinking intoxicants, frequenting questionable places, or any conduct which has a bad effect on health.

Section 18. Members taking additional benefits will be required to take additional medical examinations unless excused by the Board of Directors.

Section 19. For convenience in compiling statistics and administering the affairs of the Association, the members may be grouped into divisions as the Directors may decide.

Section 20. All claims or rights to an interest in any surplus or other property shall cease with termination of membership.

ARTICLE IV.

MEETINGS.

Section 1. The annual meeting of the Association shall be held on the second Monday of January each year at 8 P. M.

Section 2. Five members shall constitute a quorum for the transaction of business.

Section 3. Special meetings shall be called by the President when requested by either twenty members or five Directors, or in case he deems it desirable. Only the special business announced for a special meeting may be transacted at that meeting.

Section 4. Notice of any meeting of the Association with a statement of the business to be transacted, must be posted by the Secretary in conspicuous places at least ten days prior to the meeting.

Section 5. The Board of Directors shall meet at least once a week on regular dates as they may agree, and also when called by the order of the President.

Section 6. Four Directors shall constitute a quorum at any Directors' meeting.

ARTICLE V.

OFFICERS AND HOW ELECTED.

Section 1. The Management of the Association shall be vested in a President, Vice-President, Secretary, Treasurer, and Six Directors.

Section 2. At least two weeks prior to the Annual Meeting, notice shall be given to the members stating the officers to be elected to fill the vacancies due to expiring terms.

Section 3. The President, Vice President and Treasurer shall be elected by popular vote and hold office for one year or until their successors are elected and qualify.

The Secretary shall be selected by the Board of Directors from among the members of the Association.

Section 4. Each of the six Directors shall serve three years; two being elected each year by popular vote.

Section 5. In event of any vacancy occurring in any office for any reason, the Board will elect some member in good standing to fill the unexpired term until the next general election.

Section 6. The Board of Directors may, if in its judgment it is desirable, select any necessary Assistant Secretaries; from the members in good standing or from their own number.

ARTICLE VI.

DUTIES OF OFFICERS.

Board of Directors.

Section 1. The Board of Directors and officers shall supervise all matters pertaining to the business of the Association and have general control thereof.

Section 2. This includes power to suspend or expel members, or discharge any officer found unworthy of the confidence reposed in him, after due investigation and hearing.

Section 3. The Board may fill vacancies occurring in offices and decide questions not covered by the by-laws, but appeal must be taken to the membership, whenever twenty or more members demand it.

Section 4. The Board may levy not more than two assessments per year, of not more than twenty-five cents each, per member, collectable as dues when the losses have depleted the reserve to a critical point; all other assessments must be referred to regular or special meetings of the Association.

Section 5. The Board may demand a physician's certificate or arrange for physical examination by a physician, at the expense of the Association, whenever it seems desirable.

Section 6. The Board must pass upon all benefits before they are allowed.

President.

Section 7. The President shall preside at all meetings of the Association and the Directors, and perform such other duties, as may be enjoined upon him by the Association or Directors.

Section 8. He shall call regular and special meetings, sign all minutes, and decide questions of order, subject to appeal to the Association.

Section 9. He shall sign all orders drawn on the Treasurer, and have the custody of all bonds of the officers.

Section 10. He shall appoint all committees not otherwise provided for, and fill vacancies therein.

Vice-President.

Section 11. The Vice-President shall assist the President and shall assume the duties of that officer during the latter's absence or physical disability.

Section 12. He shall serve as chairman of the Investigating and Visiting committees.

Secretary.

Section 13. The Secretary shall attend all meetings of the Directors, the Association, and any committees of which he is a member, take minutes and attend to the correspondence.

Section 14. At Annual Meetings, or on retiring from office or on the written request of four Directors or ten members of the Association, he shall give a written report of the progress and the present state of the Association. He shall deliver to his successor, all books and papers pertinent to the office.

Section 15. Each week he shall post on the Association bulletin board, a list of the members drawing benefits.

Section 16. He shall keep an accurate account with each member, and compile statistical information, as outlined by the board.

Section 17. He shall notify the members of all amounts due the Association for dues, assessments, etc., receive and record the money thus or otherwise collected, and pay it promptly to the Treasurer.

Section 18. He shall make and attest, all orders drawn on the Treasurer, and deduct dues from benefits, when necessary, to prevent members from becoming delinquent while disabled.

Section 19. He shall certify as to the correctness of all bills and shall permit the Auditing committee or any officer of the Association, to examine his books at any time.

Section 20. He shall notify members of their appointment on committees, and give the chairman of each, a complete list of the committee.

Section 21. He shall notify the chairman of the Investigating Committee, of all applications for membership, and the chairman of the Visiting Committee, of all cases liable to lead to claims for benefits.

Section 22. He shall obtain from the Company each week, the names of all new employees and shall send to each new employee a letter as provided in Article III, Section 2 of these by- laws.

Section 23. He shall give bond in the sum of $2000.00, at the expense of the Association, and for faithful performance of duties he shall, while serving, receive $10.00 per year.

Treasurer.

Section 24. The Treasurer shall receive all monies from the Secretary, giving him a proper receipt therefor, keep an accurate account of all receipts and disbursements, as outlined by the Board, and allow to the Auditing committee of the Association, free access to his books.

Section 25. All monies received are to be promptly deposited or invested in such manner as the Directors shall decide.

All deposits and investments must be made in the name of the Association.

Section 26. He shall, within twenty-four hours, pay any orders drawn on him, when properly signed by the President and attested by the Secretary, and only when so signed and attested, provided sufficient funds are available.

Section 27. He shall furnish bond in the sum of $2,000.00 at the expense of the Association and shall receive a salary of one dollar per year while serving.

Section 28. At Annual Meetings, or on retiring from office, or on the written request of four Directors or ten members of the Association, he shall give a written report of the finances of the Association. He shall deliver to his successor all books and papers pertinent to the office.

Physician.

Section 29. The Directors may appoint a physician or physicians to examine applicants, and perform such other duties as may be required by the Directors, in accordance with these by-laws.

Section 30. The Directors may regularly engage a Physician and Surgeon under suitable regulations, when in their judgment the Association has grown to such proportions as to make it possible to increase the service to members without increasing the dues.

Section 31. The physician's signature and recommendations shall be appended to all reports for settlements. All claims for benefits must be accompanied by a certificate from a reputable physician.

Section 32. The Directors may enter into any agreement with the local physicians or their association which will secure service of physicians on any basis in harmony with these by-laws.

Investigating Committee.

Section 33. The Vice-President shall serve as Chairman of this Committee, which may be combined with the Visiting Committee, if the Directors deem it wise.

Section 34. The President shall each month appoint one or more members to serve three months, or until their successors are appointed and qualify.

Section 35. Each applicant must be investigated by at least two members of the Committee who shall affix their signatures to the report, which must be made to the Directors through the Secretary.

Section 36. The Committee, if in doubt, shall so report with definite reasons for hesitating and any recommendations they can make.

Section 37. The Committee may be reimbursed for any necessary expense incurred in making investigations.

Visiting Committee.

Section 38. The Vice-President shall serve as Chairman of this Committee.

Section 39. The President shall each month appoint one or more members to serve three months or until their successors are appointed and qualify.

Section 40. Each person drawing disability benefits, shall be visited once each week, by at least one member of this Committee, unless otherwise ordered by the Directors or prevented by quarantine regulations.

Section 41. Separate weekly reports of each case on a regular form, shall be made by the members making the visits and endorsed by the chairman. These reports shall be handed to the Secretary for his files and for the scrutiny of the Directors. They shall include any violations either of the letter or the spirit of the by-laws or any tendency to increase the risk of the Association which may be noticed, and any recommendations of any kind for the general good of the members of the Association.

Section 42. This Committee may be reimbursed for any necessary expense incurred in making visits or in prosecuting their prescribed duties.

Section 43. If in doubt at any time, the Committee shall so report with definite reasons for hesitating and any recommendation they can make.

Auditing Committee.

Section 44. Each year, as soon as possible after election, the President shall appoint one member of an Auditing Committee to serve three years, or until his successor is appointed and qualifies.

Section 45. The senior member of this Committee shall act as chairman.

Section 46. The Committee shall audit the books of Secretary, Treasurer, and any others handling the monies of the Association,

and approve the Secretary's reports and report at the Annual meeting of the Association.

Section 47. Any irregularities discovered by the Auditing Committee shall be reported to the Directors at once.

ARTICLE VII.

FUNDS.

Section 1. The Benefit fund shall be used only to cover benefits provided for in the by-laws, together with attendant expenses, and shall receive all revenue collected as dues for benefits.

Section 2. If on the twentieth of December of each year there is money in the hands of the Treasurer in excess of $200, all or any part of such excess as the Directors may deem advisable, shall be distributed to the members of the Association. This distribution shall be pro rata in accordance with the sum paid by each member for the period covered by this distribution and shall be paid only to members in good standing at the time of the distribution.

ARTICLE VIII.

DUES AND BENEFITS.

Section 1. The dues of the Association, shall be payable within two days after each pay day.

Section 2. On joining the Association, each member shall pay an initiation fee of ten times the weekly dues of the class in which he elects membership, unless application is made within two months after an employee is eligible for membership, in which case the initiation fee shall be five times the weekly dues of the class in which membership is elected.

Section 3. The regular dues shall be determined by the benefits which the member elects to take as follows:

Classes, Dues and Benefits.

Classes.	Weekly dues.	Daily disability benefits.
1,	$0 05	$0 40
2,	10	80
3,	15	1 20
4,	20	1 60
5,	25	2 00

Section 4. Members of this Association may each take the various benefits at the corresponding rates of dues, provided that no member shall receive temporary disability benefits in excess of seventy-five per cent of his average wages for the three months preceding disability.

Section 5. Dues must be paid when due, without solicitation from the Secretary, in order to retain membership, except that in event of a member otherwise eligible for membership being temporarily laid off by the Company, the Directors, upon request and satisfactory assurance of credit responsibility, may arrange to extend the membership for a period not to exceed thirteen weeks, when the amount in the treasury will warrant it, and on condition that all such accrued dues are to be deducted from any benefits paid until the accrued dues are paid up.

Section 6. When members have been laid off temporarily, and then resume work after having had the advantages of protection, as covered in Section 5, whether receiving benefits or not, their dues shall be doubled until all indebtedness to the Association has been paid.

Section 7. The provisions of Sections 5 and 6, of this article are available only to members who do not take up any occupation, which, in the opinion of the Directors, should enable them to pay their dues, or should warrant the Association in cancelling the membership.

Section 8. Members shall be eligible for sick benefits after thirty days from the date of their becoming members. In the event of a member later taking additional benefits, such additional benefits become effective at the expiration of thirty days from the date of collecting the increased dues.

Section 9. Benefits shall be paid as promptly as possible after the required proofs of claims, but the Directors shall have power to stop or withhold benefits in the cases of members who are able to work or are otherwise found to be imposing on the Association.

Section 10. Members desiring to leave the vicinity while drawing disability benefits, must arrange satisfactorily with the Directors, for further and sufficient proof of disablement, or surrender all rights to further benefits.

Section 11. The fact that a member drawing disability benefits, frequents saloons or engages in any work either personal or otherwise, shall be evidence of his ability to work, and benefits shall cease unless sufficient excuse is furnished satisfactory to the Physician and Directors.

Section 12. No benefits shall be paid for disability resulting from ailments existing prior to joining the Association, unless specifically accepted by the Directors at time of joining.

Section 13. Disability arising through intoxication, immorality, or willful misconduct, shall not be subject to disability benefits.

Section 14. Disability benefits shall begin on the third day but not earlier than the day on which the Secretary receives notice of disability, except by consent of the Directors.

Section 15. A member having been reinstated after suspension or expulsion, cannot participate in benefits until one month after reinstatement, except by consent of Directors.

Section 16. Any disabled member who shall make a conscientious effort to return to work and who, as a result, shall meet with a relapse which shall cause two or more short periods of disability instead of one longer one, shall receive benefits as for one continuous disability, except that no benefits shall be paid for the days during which the member was at work.

Section 17. Convalescent members able to work part time, may receive partial benefits in keeping with the facts at the discretion of the Directors.

Section 18. Benefits payable on account of disability shall be payable only to the disabled member, or to a parent, guardian or trustee entitled to receive and receipt for wages of such member or to act for him.

Such benefits payable to a member unable to execute a proper receipt may be paid to a relative or other proper person, selected by the Directors of the Association, to use for the benefit of the member, and the receipt of such person shall be a sufficient discharge.

Disablement benefits remaining unpaid at the death of a member shall be payable to the person or persons designated by the Directors of the Association.

ARTICLE IX.

PERIODS OF BENEFITS.

Section 1. Temporary disability benefits shall be payable for a period not to exceed twenty-six weeks in any one calendar year.

Section 2. In estimating length of disability, Sundays and legal holidays shall not be included unless the disabled member would have been regularly employed on such days.

Section 3. Only one benefit, not to exceed twenty-six weeks, shall be paid for one disability or for any one chronic disease or recurring disability.

Section 4. Disability beginning less than four weeks after a previous disability shall be considered a part of the former disability unless there is positive evidence to the contrary.

ARTICLE X.

DISSOLUTION.

Section 1. This Association shall not be dissolved so long as twenty members in good standing desire to continue it, but its by-laws or

method of doing business may be altered at the will of the Association.

Section 2. In case of dissolution, the funds, except as provided in Section 3 of this Article, shall be disposed of as the members in good standing at the time of such dissolution shall decide by a majority vote.

Section 3. In case of dissolution of this Association, any property or money loaned or donated by the ..... Company or donations received with specific stipulations, shall not be divided among members but shall be disposed of as may be determined by the donors.

ARTICLE XI.

Section 1. At all meetings of the Association the following order of business shall be observed, except that by consent of two-thirds of the members present, it may be changed:

Reading and approval of minutes.
Report of Secretary.
Report of Treasurer.
Report of Auditing Committee.
Reports of Committees.
Communications, correspondence and bills.
Unfinished business.
New business.

Section 2. Each member of the Association shall be furnished a copy of these by-laws.

Section 3. Cushing's Manual shall be followed in all rules of order not covered in these by-laws.

Section 4. These by-laws may be amended at any meeting of the Association by the affirmative vote of a majority of the members of the Association, provided the proposed amendments are posted at least two weeks before action is taken. All by-laws or amendments shall be effective immediately after passage, unless otherwise provided.

EMPLOYEES' PENSION SYSTEMS.

Following the study of Employees' Mutual Relief Associations made by the Division of Industrial Hygiene of the Department of Labor and Industry, there was made a study of Employees' Pension Systems in operation in a large number of industries.

The pension systems vary from each other less widely than do the relief systems. With only two exceptions, the funds provided for the operation of the pension systems were established and maintained without aid from the employees. In the two exceptions mentioned, a surplus from the relief association was used as a part of the pension fund.

The ages at which pensions became available and the amount paid varied very slightly.

The accompanying specimen pension system is compiled almost verbatim from the International Harvester Companies' Pension Plan and from the Philadelphia and Reading Railway Company Pension System, for which due acknowledgment is hereby given.

SPECIMEN PENSION SYSTEM.

PENSION BOARD.

Administration.

Section 1. The administration of the pension fund shall be in charge of a Pension Board consisting of five members who shall all be officers or employees of .....Company, and shall be appointed annually by the Board of Directors of this Company, to serve for one year or until their successors are appointed and shall qualify.

Officers.

Section 2. The Pension Board shall elect a Chairman and a Secretary from among its members, and the Treasurer of ..... Company shall be ex-officio Treasurer of the Fund. The Board may make and enforce rules for the efficient administration of the pension fund, subject to the approval of the Board of Directors. The Pension Board shall control the payment of pension allowances under the rules hereinafter stated.

Quorum.

Section 3. A majority of the Pension Board shall constitute a quorum for all purposes.

Representation.

Section 4. The members of the Board shall be chosen so that the principal departments of the business shall have representation.

PENSION FUND.

Section 5. The Treasurer of the Company shall be custodian and Treasurer of the fund, and additions shall be made to said fund yearly

or from time to time according to the aggregate pension allowances and the amount available in the pension fund for payment of the same. Should the aggregate pension allowances exceed in any one year, such sum as the Board of Directors may have designated as available for this purpose, then unless the Board of Directors increases the yearly amount usable for pensions, a new rate shall be established proportionately reducing all allowances.

Payments from this fund shall be made only in accordance with and by direction of the Pension Board.

ELIGIBILITY.

Section 6. The Pension Board may authorize the payment of a pension to any retired employee on the following basis:

(a) All employees of this Company, engaged in any capacity are eligible to pensions as hereinafter stated.

(b) All male employees who shall have reached the age of sixty-five years and shall have been twenty or more years in the service, may, at their own request, or at the discretion of the Pension Board, be retired from active service and become eligible to a pension.

(c) All male employees who shall have been twenty or more years in the service, shall be retired at the age of seventy years on the first day of the calendar month following that in which they shall have attained said age, unless at the discretion of the Pension Board some later date be fixed for such retirement.

(d) All female employees who shall have reached the age of fifty years and shall have been twenty or more years in the service, may, at their own request, or at the discretion of the Pension Board, be retired from active service and become eligible to a pension.

(e) All female employees shall be retired at the age of sixty years, on the first day of the calendar month following that in which they shall have attained said age, unless at the discretion of the Pension Board, a later date be fixed for such retirement.

(f) Any faithful employee of the Company, irrespective of his age or length of service, who shall have received injuries in the performance of his duty which totally incapacitate him for his regular or other vocation, or who shall through sickness become so incapacitated, may be awarded such sum, as a pension, for such a length of time as the President shall determine.

DEFINITIONS.

Section 7. The terms "service" and "in the service" apply to all employees of the .....Company, who have received a stated and regular compensation from the company.

Temporary Absence.

Section 8. A temporary lay-off on account of illness or of reduction of force, is not to be considered as a break in the continuity of service, but when such absence exceeds six consecutive months it shall be deducted in computing the length of active service.

Leaving Service.

Section 9. If a person, after leaving the service for more than two years, shall be re-employed, he shall be considered in his relation to the pension system as a new employee.

PENSION ALLOWANCES AND CONDITIONS.

Amount.

Section 10. The sums which the Board of Pensions may authorize to be paid monthly to employees retired at the age limit, shall be as follows: For each year of active service, an allowance of one per cent of the average annual pay during the ten years next preceding retirement; but no pension shall exceed $100.00 per month, or be less than $21.00 per month.

Payment.

Section 11. (a) Pension allowances shall be paid on the first of each month from the date of retirement until the death of employee.

(b) At the discretion of the Pension Board these allowances may be continued to widows and orphans of a pensioner for a limited period.

(c) Pension allowances shall be non-assignable, and an attempted transfer or pledge of the same shall not be recognized by the Pension Board and may in its discretion work a forfeiture thereof.

(d) Pension allowances may be suspended or terminated by the Pension Board in cases of gross misconduct, or of any violation of the Rules, or, at its discretion, may be paid to some member of the family.

(e) The acceptance of the pension shall not debar any retired employee from engaging in any other business which in the judgment of the Pension Board is not prejudicial to the interests of this Company, but he cannot re-enter service.

(f) No payments for pensions shall be approved by the Pension Board until payments from any relief fund operated by this Company shall cease.

PENSION—HOW COMPUTED.

Section 12. The amount of pension granted on account of advanced age will depend, as before stated, on two conditions; the number of years the person has served the Company, and the amount of his average wages per year for the ten years next preceding retirement. Thus, for illustration, if the average pay per year for the last ten years of active service equals $600.00, and if the service has been continuous for twenty-five years, the pension would be twenty-five (25%) per cent of $600.00, or $150.00 per year, or $12.50 per month. Since the minimum pension has been fixed at $21.00 per month, then to this regular percentage, $8.50 would be added, making the minimum sum of $21.00.

In special cases where the term of service is less than twenty years, the pension and the amount of same, if any, will be determined solely at the discretion of the Board of Pensions.

Department heads are expected to keep informed of the whereabouts and physical condition of former employees receiving pensions, and are required to advise the Secretary of the Board of Pensions of the death of the pensioner, and of any other circumstances which would affect his monthly payment.

A physical examination by a physician approved by the Board of Pensions, will be required of employees who wish to be retired on a pension allowance, because of incapacity.

HOW TO SECURE A PENSION.

Section 13. An employee wishing to apply for a pension should first take up the subject with the head of the department in which he is serving, or with a member of the Pension Board. A form will then be furnished, which must be filled out and signed, giving the necessary information concerning the applicant's age, length of service and wages. This formal application must be signed by the Superintendent or head of department employing applicant, and then sent to the Secretary of the Pension Board at his office.

NO CONTRACTUAL RIGHTS CONFERRED.

Section 14. Neither the establishment of this system nor the granting of a pension, nor any other action now or hereafter taken by the Pension Board, or by the offices of this Company, shall be held or construed as creating a contract, or giving to any officer, agent or employee a right to be retained in the service, or any right to any pension allowance, and the Company expressly reserves, unaffected hereby, its right to discharge without liability, other than for salary or wages due or unpaid, any employee, whenever the interests of the Company may in its judgment so require.

OUTLINE OF EMPLOYEES' ORGAN-

Public Service Corporations.	Fund supported by	Organization managed by	Membership	Conditions of membership
1, ...	Employer, ...	Employer, ...	Automatic, ..	Recommendation by Committee.
2, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Successful medical examination before 45 years of age.
3, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Successful medical examination before 45 years of age.
4, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Male employees between 18 and 45 years of age in service 6 months or longer and in good health.
5, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Successful medical examination before 45 years of age.
Industrial Establishments.				
1, ...	Employees, ..	Employees, ..	Non-compulsory.	Good health and between 16 and 60 years of age.
2, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Satisfactory medical examination.
3, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Successful medical examination.
4, ...	Employees, ..	Employer & Employees.	Non-compulsory.	Employee of company, ...
5 A, ...	Employer & Employees.	Employer & Employees.	Non-compulsory.	Successful medical examination before 50 years of age.
B, ...	Employer, ...	Employer, ...	Automatic, ..	Employee of company, ...
6, ...	Employer & Employees.	Employer, ...	Non-compulsory.	Employee of company, ...

BENEFIT AND AID SYSTEMS.

IZATION.

Dues or Contributions			Membership terminated at end of employment	Miscellaneous
Amount	Deducted from wages	Collected during disability		
No dues from employees,	Not deducted,	No, ...	Yes.	
Monthly dues of 75c to $3.75.	Deducted. ...	No.	Yes.	
Monthly dues of 75c to $3.75. After contributing 21 years dues shall be reduced one-third.	Deducted. ...	No.	Yes,	Death benefits may be continued after leaving employ of company if member of association 3 years.
Membership fee of 50c. Monthly dues of 25c.	Deducted. ...	Yes, ...	Yes.	
Monthly dues of 75c to $3.75.	Deducted. ...	No.	Yes,	Death benefits may be continued after leaving employ of company if a member of Relief Department 1 year and an employee of company 3 years.
Weekly dues of 5c to 31c. Special dues of 40c a week for first 14 weeks, or 20c a week for first 14 weeks if joining during first month of employment. 2 assessments a year of 25c each if reserve is depleted.	Deducted. ...	Yes, ...	Yes,	Benefits for death of wife or child may be procured by paying additional dues.
Weekly dues of 15c to $1.00. Dues of members joining between 45 and 60 years of age are increased from 1.5 to 2.3 times.	Deducted. ...	No, unless wages are paid during disability.	Yes,	Death benefits after termination of employment may be retained, after 3 years' service with company and 1 year's membership in association.
1½ to 1¾ per cent of wages.	Deducted. ...	No, unless full wages are paid during disability.	Yes,	Death benefits may be continued after leaving employ of company after 3 years' membership in association. Employees joining association after 45 years of age, eligible for not more than $100 in death benefits after passing satisfactory medical examination.
Admission fee of 25c to 50c. Weekly fee of 5c to 10c. Not more than two assessments of 25c to 50c in one year.	Not deducted,	Yes, ...	Yes,	When fund reaches $1500, all dues are remitted until fund is reduced to $600.
Monthly dues of 25c to $1.50.	Deducted. ...	Yes, ...	Yes.	
No dues from employees,	Not deducted,	No.	Yes.	
.4 to .8 of 1% of wages. Not more than $1.00 a month.	Deducted. ...	Yes, ...	Yes.	

	Fund supported by	Organization managed by	Membership	Conditions of membership
7, ...	Employees, ..	Employees, ..	Non-compulsory.	Employee of company 3 months, good physical condition and under 45 years of age.
8, ...	Employees, ..	Employees, ..	Non-compulsory.	Certificate of good health and have been in employ of company one month.
9, ...	Employees, ..	Employees, ..	Non-compulsory.	Any employee of sound health, of good moral character and between 16 and 70 years of age.
Mercantile Establishments.				
1, ...	Employees, ..	Employer & Employees.	Compulsory,	Employee of company 2 months.
2, ...	Employees, ..	Employees, ..	Non-compulsory.	Employee of company, ...
3, ...	Employees, ..	Employees, ..	Non-compulsory.	Employee of company 1 month.

—Continued.

Dues or Contributions			Membership terminated at end of employment	Miscellaneous
Amount	Deducted from wages	Collected during disability		
Initiation fee of $1.00. Monthly dues of 50c. Assessments as necessary to keep up general fund.	Not deducted,	Yes, ...	No,.	
20c to 60c a month. Assessments when funds are insufficient to meet payments.	Deducted. ...	Yes, ...	Yes,	Dues may be reduced or remitted when balance in treasury warrants such procedure.
Membership fee of 50c to $1.00. Monthly dues of 25c to 75c.	Deducted. ...	Yes, ...	Yes,	Payments of dues by all members who have paid for 12 consecutive months shall be suspended when the fund reaches $750 and remain suspended until fund amounts to $500.
10c to 60c a month. Extra assessments if necessary.	Deducted. ...	Yes, ...	Yes	
Membership fee of 50c. Monthly dues of 20c to 50c. Extra assessments of 10c to 25c to pay death benefits.	Not deducted,	Yes, ...	Yes	
Initiation fee of 10c to 50c. Weekly dues of 5c to 25c. Assessment of 25c to $1.25 to pay death benefits.	Not deducted,	Yes, ...	Yes.	

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

ORGANIZATION—Continued.

	Time Between Beginning of Disability and Operation of Benefits		Time After Joining Association that Members First Receive Benefits		
	Accident	Sickness	Accident	Sickness	Death
Public Service Corporations					
1,	Immediately,	Eight days,	Immediately,	Eight days,	Immediately
2,	Immediately,	Three days,	Immediately,	Three days,	Immediately
3,	Immediately,	Immediately if disablement continues 3 wks. or more, otherwise after 7 days.	Immediately,	Immediately if disablement continues 3 wks. or more, otherwise after 7 days.	Immediately
4.	Seven days,	Seven days,	Seven days after payment of first dues.	Seven days after payment of first dues.	Immediately, if first dues have been paid.
5,	Immediately,	Six days,	Immediately,	Six days,	Immediately
Industrial Establishments					
1,	Three days,	Three days.	Thirty days,	Thirty days,	Thirty days
2,	Immediately,	Six days,	Immediately,	Six days,	Immediately
3,	Immediately,	Seven days,	Immediately,	Seven days,	Immediately
4.	Immediately,	Immediately,	Immediately,	Immediately,	Six months
5 A.	One week,	One week,	Thirty-seven days,	Thirty-seven days,	Thirty days
B.	Immediately,	.....	Immediately,	.....	Immediately
6,	Seven days,	.....	Seven days,	.....	Immediately
7,	Immediately,	Two weeks,	Three months,	Three months,	One year
8,	Three days,	Three days,	Six days,	Six days,	Immediately
9.	Immediately, if disablement continues 30 days or more, otherwise after 7 days.	Immediately, if disablement continues 30 days or more, otherwise after 7 days.	Thirty days,	Thirty days,	Thirty days

Mercantile Establishments					
1, ...	One week, ...	One week, ...	Thirty days, ...	Thirty days, ...	Thirty days
2, ...	Immediately, ...	Immediately, ...	Sixty days, ...	Sixty days, ...	Immediately
3, ...	Two days, ...	Two days, ...	Three months, ...	Three months, ...	Immediately

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

ACCIDENT BENEFITS.

	Partial Disability		Total Disability		Death Benefits	Miscellaneous
	Maximum Benefits a Week	Minimum Benefits a Week	Maximum Benefits a Week	Minimum Benefits a Week		
Public Service Corporations 1, ...	100% of loss in earning capacity for 13 weeks; 50% of loss in earning capacity for remainder of 6 years. Necessary surgical treatment.	100% of loss in earning capacity for 13 weeks; 50% of loss in earning capacity for remainder of 6 years. Necessary surgical treatment.	Full pay for 13 weeks; half pay for remainder of disability. After 6 years, such pay is not to exceed $20 a week. Necessary surgical treatment.	Full pay for 13 weeks; half pay for remainder of disability. After 6 years, such pay is not to exceed $20 a week. Necessary surgical treatment.	3 years' pay, not to exceed $5000; and necessary burial expenses, not to exceed $150.	.....
2, ...	$17.50 for first 52 weeks; $8.75 during remainder of disability. Necessary surgical attendance during disability.	$3.50 for first 52 weeks; $1.75 during remainder of disability. Necessary surgical attendance during disability.	$17.50 for first 52 weeks; $8.75 during remainder of disability. Necessary surgical attendance during disability.	$3.50 for first 52 weeks; $1.75 during remainder of disability. Necessary surgical attendance during disability.	$250 to $1250. If no dependents, necessary expenses incident to death.	Members may receive extra death benefits by paying extra dues.
3, ...	$17.50 for first 52 weeks; $8.75 during remainder of disability.	$3.50 for first 52 weeks; $1.75 during remainder of disability.	$17.50 for first 52 weeks; $8.75 during remainder of disability.	$3.50 for first 52 weeks; $1.75 during remainder of disability.	$250 to $1250. If no dependents, necessary expenses incident to death.	Members may receive extra death benefits by paying extra dues.
4, ...	$7.00. For a period not to exceed 100 days in any consecutive 12 months.	$3.50. For a period not to exceed 100 days in any consecutive 12 months.	$7.00. For a period not to exceed 100 days in any consecutive 12 months.	$3.50. For a period not to exceed 100 days in any consecutive 12 months.	$150. If no heirs, the cost of interment, not to exceed $150.	.....
5, ...	$17.50 for first 52 weeks; $8.75 during continuance of disability. Necessary surgical treatment.	$3.50 for first 52 weeks; $1.75 during continuance of disability. Necessary surgical treatment.	$17.50 for first 52 weeks; $8.75 during continuance of disability. Necessary surgical treatment.	$3.50 for first 52 weeks; $1.75 during continuance of disability. Necessary surgical treatment.	$300 to $1500, ...	Members may receive extra death benefits by paying extra dues.

Industrial Establishments						
1, ...	$12.00 for 13 weeks for 1 disability. For not more than 26 weeks in any one year. Surgical attendance.	$3.00 for 13 weeks for 1 disability. For not more than 26 weeks in any one year. Surgical attendance.	$12.00 for 13 weeks for 1 disability. For not more than 26 weeks in any one year. Surgical attendance.	$3.00 for 13 weeks for 1 disability. For not more than 26 weeks in any one year. Surgical attendance.	$50 to $200, ...	Members joining Association after 45 years of age, receive benefits reduced from 10 to 30%, proportionate to their ages.
2, ...	$18. For 104 weeks. Necessary surgical attendance.	$3. For 104 weeks. Necessary surgical attendance.	$18 for 104 weeks. Necessary surgical attendance.	$3 for 104 weeks. Necessary surgical attendance.	$200 to $1600, ...	Special benefits for serious accidents resulting in amputation or loss of eyesight.
3, ...	Half pay for 52 weeks.	Half pay for 52 weeks.	Half pay for 52 weeks.	Half pay for 52 weeks.	Amount equal to 2 years' average pay.	.....
4, ...	$5. For 13 weeks in 1 year.	$2.50. For 13 weeks in 1 year.	$5. For 13 weeks in 1 year.	$2.50. For 13 weeks in 1 year.	$50 to $100, ...	.....
5 A, ...	$16.50 during disability.	$2.75 during disability.	$16.50 during disability.	$2.75 during disability.	$50 to $150, ...	Accident benefits are paid only when occurring while members are not performing duties of employes.
B, ...	Based on compensation for total disability proportionate to impairment of earning power. Necessary medical, surgical or hospital attendance.	Based on compensation for total disability proportionate to impairment of earning power. Necessary medical, surgical or hospital attendance.	$18 and necessary medical, surgical or hospital attendance.	$3 and necessary medical, surgical or hospital attendance.	$50 to $150 and pension to dependents.	These regulations are modified to comply with accident compensation laws in various States.
6, ...	Half pay for 6 months, then sufficient to give income of half pay for 18 months. Not more than $50 a month.	Half pay for 6 months, then sufficient to give income of half pay for 18 months. Not more than $50 a month.	Half pay for 2 years. Not more than $50 a month.	Half pay for 2 years. Not more than $50 a month.	$50, and half pay to dependents for 18 months, not more than $50 a month. If no dependents, expenses incident to death.	.....
7, ...	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$100, ...	.....

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

ACCIDENT BENEFITS—Continued.

	Partial Disability		Total Disability		Death Benefits	Miscellaneous
	Maximum Benefits a Week	Minimum Benefits a Week	Maximum Benefits a Week	Minimum Benefits a Week		
8.	$7.50. For not more than 12 weeks in any 12 successive months.	$2.50. For not more than 12 weeks in any 12 successive months.	$7.50. For not more than 12 weeks in any 12 successive months.	$2.50. For not more than 12 weeks in any 12 successive months.	$50 to $100.	1 week's benefit is paid when absence from work is caused by death in the immediate family.
9.	$9. For not more than 13 weeks in any 12 months.	$3. For not more than 13 weeks in any 12 months.	$9. For not more than 13 weeks in any 12 months.	$3. For not more than 13 weeks in any 12 months.	$50 to $150. If no heirs, necessary funeral expenses.	No benefits shall be paid when benefits are paid under Workmen's Compensation Law of Wisconsin.
Mercantile Establishments						
1.	$3 for first week; $6 for next 12 weeks. For not more than 13 weeks in one year.	75c for first week; $1.50 for next 12 weeks. For not more than 13 weeks in one year.	$3 for first week; $6 for next 12 weeks. For not more than 13 weeks in one year.	75c for first week; $1.50 for next 12 weeks. For not more than 13 weeks in one year.	$50 to $200.	.....
2.	$6. For not more than 8 weeks in one year.	$2.50. For not more than 8 weeks in one year.	$6. For not more than 8 weeks in one year.	$2.50. For not more than 8 weeks in one year.	$35 to $75.	.....
3.	$12. For not more than 100 days.	$2.40. For not more than 100 days.	$12. For not more than 100 days.	$2.40. For not more than 100 days.	Total amount obtained by assessment of remaining members.	Yearly pro rata distribution on Dec. 20th of all money in treasury in excess of $200.

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

SICK BENEFITS.

	Maximum Benefits a Week	Minimum Benefits a Week	Death Benefits	Miscellaneous
Public Service Corporations 1,	Full pay for 13 weeks; half pay for 39 weeks.	Full pay for 4 weeks; half pay for 9 weeks.	6 months' to 1 year's pay; not more than $2000. If no dependents, necessary expenses incident to death.	Sickness death benefits are given only after 2 years' service with company.
2,	$14.00 for first 52 weeks; $7 during remainder of sickness.	$2.80 for first 52 weeks; $1.40 during remainder of sickness.	$250 to $1250. If no dependents, necessary expenses incident to death.	Members may receive extra death benefits by paying extra dues.
3.	$14 for 52 weeks. If a contributor for 15 years, $7 during remainder of sickness.	$2.80 for first 52 weeks. If a contributor for 15 years $1.40 during remainder of sickness.	$250 to $1250. If no dependents, necessary expenses incident to death.	Members may receive extra death benefits by paying extra dues.
4.	$7. For a period not to exceed 100 days in any consecutive 12 months.	$3.50. For a period not to exceed 100 days in any consecutive 12 months.	$150. If no heirs, the cost of interment, not to exceed $150.	.....
5.	$17.50 for first 52 weeks; $8.75 for additional 52 weeks.	$3.50 for first 52 weeks; $1.75 for additional 52 weeks.	$300 to $1500, ...	Members may receive extra benefits by paying extra dues.
Industrial Establishments 1.	$12 for 13 weeks. For not more than 26 weeks in any one year. Medical attendance.	$3 for 13 weeks. For not more than 26 weeks in any one year. Medical attendance.	$50 to $200, ...	Members joining association after 45 years of age receive benefits reduced from 10 to 30% proportionate to their ages.
2.	$18 for 52 weeks; $9 for additional 52 weeks.	$3 for 52 weeks; $1.50 for additional 52 weeks.	$200 to $1600, ...	.....
3.	Half pay for 52 weeks, ...	Half pay for 52 weeks, ...	Amount equal to 1 year's average pay.	.....
4,	$5. For 13 weeks in one year....	$2.50. For 13 weeks in one year,	$50 to $100, ...	.....
5 A,	$16.50 during disability, ...	$2.75 during disability, ...	$50 to $150, ...	.....
B.	None, ...	None, ...	None.	.....
6,	None, ...	None, ...	None, ...	.....

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

SICK BENEFITS.

	Maximum Benefits a Week	Minimum Benefits a Week	Death Benefits	Miscellaneous
7, ...	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$5 for first 7 weeks; $3 for next 8 weeks. For not more than 15 weeks in any one year.	$100, ...	.....
8, ...	$7.50. For not more than 12 weeks in any 12 successive months.	$2.50. For not more than 12 weeks in any 12 successive months.	$50 to $100, ...	1 week's benefit is paid when absence from work is caused by death in the immediate family.
9, ...	$9. For not more than 13 weeks in any 12 months.	$3. For not more than 13 weeks in any 12 months.	$50 to $150. If no heirs, necessary funeral expenses.	.....
Mercantile Establishments				
1, ...	$3 for first week; $6 for next 12 weeks. For not more than 13 weeks in one year.	75c for first week; $1.50 for next 12 weeks. For not more than 13 weeks in one year.	$50 to $200, ...	.....
2, ...	$6. For not more than 8 weeks in one year.	$2.50. For not more than 8 weeks in one year.	$35 to $75, ...	.....
3, ...	$12. For not more than 100 days.	$2.40. For not more than 100 days.	Total amount obtained by assessment of remaining members.	Yearly pro rata distribution on Dec. 20th of all money in treasury in excess of $200.

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

PENSIONS.

	Fund Supported by	Conditions Under Which Pensions become Effective	Amounts
Public Service Corporations			
1, ...	Employer, ...	Males at 60 years, females at 55 years, if in service 20 years. Males at 55 years, females at 50 years, if in service 25 years. All employees in service 30 years. At discretion of Committee, any totally disabled employee in service 15 years.	Annual pay is one per cent of average annual pay for 10 years, multiplied by the number of years in the service of the company.
2, ...	Employer & Employee,.	Regulated by employing company, ...	The pay in cents per month is determined by multiplying the number of months member has belonged to the association by the number of class (determined by pay of employee) to which he belongs.
3, ...	Employer & Employee,.	After 70 years of age or after 65 years of age and incapacitated, if in employ of company 30 years; or any faithful employee if totally incapacitated because of injury received in performance of duty.	Monthly pay is 1 per cent of average monthly pay for 10 years preceding retirement multiplied by the number of years in the service of the company.
4, ...	Employer, ...	After 65 years of age, if in the employ of the company continuously for 25 years and receiving pay of not more than $200 a month.	$20 a month.
6, ...	Employer, ...	Compulsory—after 65 years of age if in employ of company 10 years. By request—after 60 years of age if in employ of company 10 years. Any employee approved by Board of Directors and recommended by Company's Surgeon.	Monthly pay is 1 per cent of average monthly pay for the 10 years preceding retirement multiplied by the number of years in service of company. Not less than $20 a month.
7, ...	Employer, ...	Compulsory—after 70 years of age and in employ of company 10 years. By request—employees other than officers, after 65 years of age and 10 years in service of company; officers or other employees after 61 years of age and 10 years in employ of company, if incapacitated; any male employee 25 years in service, if permanently disabled; any female employee 20 years in service, if permanently disabled. All retirements under 70 years of age made only on recommendation of Chief Surgeon.	Monthly pay is 1 per cent of average monthly pay for the 10 years preceding retirement multiplied by the number of years in service of the company.

OUTLINE OF EMPLOYEES' BENEFIT AND AID SYSTEMS—Continued.

PENSIONS—Continued.

	Fund Supported by	Conditions Under Which Pensions become Effective	Amounts
Industrial Establishments 3,	Employer,	Compulsory—males at 70 years of age, females at 60 years, unless Board should fix a later date. By request—males at 65 years of age after 20 years in service; females at 50 years of age after 20 years in service.	Annual pay is 1 per cent of average annual pay for last 10 years multiplied by number of years in service of company; not more than $100, nor less than $21 a month.
5 A,	Employer,	At 70 years of age after 20 years service. At discretion of President after 60 years of age and 20 years in service. Given only to members of Relief Department.	Monthly pay is 1 per cent of average monthly pay for last 10 years multiplied by number of years in service of company; not more than $100 nor less than $20 a month. Pensions to dependents after death of pensioner.
10,	Employer,	Compulsory—males 70 years of age and 20 years in service; females 60 years of age and 20 years in service. By request—males 60 years of age and 20 years in service; females 50 years of age and 20 years in service. Any employee totally incapacitated through no fault of his own, after 15 years service is eligible for a pension.	Annual pay is 1 per cent of average annual pay during last 10 years multiplied by the number of years in service of company; not more than $100 nor less than $12 a month.
11,	Employer,	After 65 years of age and having given 20 years continued and satisfactory service. After 60 years of age and having given 20 years service, if approved by the Directors.	If retired at 65 years of age, an annuity for 1 year of 50 per cent of his or her average pay for the preceding 10 years. After the first year, the annuity is to continue at 25 per cent. If retired before 65 years of age, an annuity of 50 per cent of his or her average pay for the preceding 10 years to be paid until the recipient is 65 years of age, thereafter at the rate of 25 per cent.
Mercantile Establishments 1,	Not specified,	Pension system in force but no information available.	Pension system in force, but no information available.

ACKNOWLEDGMENTS.

For assistance in compiling the foregoing information the Division of Industrial Hygiene of the Department of Labor and Industry wishes to make public acknowledgment of the receipt of regulations governing the Benefit, Pension, or Benefit and Pension systems of the following companies. It is gratifying to note that requests for information along these lines were responded to promptly and with ample data upon the desired subject.

PUBLIC SERVICE CORPORATIONS:

Philadelphia & Reading Railway Company, Philadelphia, Pa.
Pennsylvania Railroad Company, Philadelphia, Pa.
American Telephone & Telegraph Company, Harrisburg, Pa.
United Gas Improvement Company, Philadelphia, Pa.
Chicago, Burlington & Quincy Railroad Company, Chicago, Ill.
Philadelphia Rapid Transit Company, Philadelphia, Pa.
Canadian Pacific Railway Company, Montreal, Canada.
Illinois Central Railroad Company, Chicago, Ill.

INDUSTRIAL ESTABLISHMENTS:

Curtis Publishing Company, Philadelphia, Pa.
Carpenter Steel Company, Reading, Pa.
Dodge Manufacturing Company, Mishawaka, Indiana.
Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
United States Steel Corporation, New York City.
International Harvester Companies, Chicago, Ill.
Swift & Company, Chicago, Ill.
Lehigh Coal and Navigation Company, Lansford, Pa.
Larkin Company, Buffalo, N. Y.
Ed. V. Price & Company, Chicago, Ill.
Standard Oil Company, New York City.
Inland Steel Company, Indiana Harbor, Indiana.
Telegraph Printing Company, Harrisburg, Pa.
Ford Motor Company, Detroit, Michigan.
E. I. du Pont de Nemours Powder Company (Barksdale Works) Barksdale, Wisconsin.
J. B. Lippincott Company, Philadelphia, Pa.

MERCANTILE ESTABLISHMENTS:

Kaufman Company, Pittsburgh, Pa.
John Wanamaker, Philadelphia, Pa.
Dives, Pomeroy & Stewart, Harrisburg, Pa

PROCEEDINGS

OF THE

SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY

PART I

TUESDAY, NOVEMBER 17th, 1914

(Continued from the June Bulletin)

GENERAL SESSION—SAFETY ORGANIZATION.

Tuesday evening, November 17th, 1914, 8:00 o'clock P. M.

The session was called to order by Dr. John Price Jackson, Pennsylvania Commissioner of Labor and Industry, who spoke as follows:

The meeting tonight, as you know from the program, has to do with the various Safety Council Organizations of the State.

I take pleasure in turning this meeting over to this great Council of Safety, and hand it over to the hands of its President, Mr. R. W. Campbell.

The CHAIRMAN, MR. R. W. CAMPBELL: I have felt that it is extremely fitting that a meeting, the topic of which is "safety organization" should be handled by the National Safety Council and its local Councils in the State of Pennsylvania. I say this in view of those lessons which we feel that we have learned in the last few years respecting accident prevention. We have studied accidents, their causes, and their means of prevention, and we have learned many valuable lessons. We have learned that there must be safeguarding, but that in addition to the safeguarding which can be compelled by a State organization such as the one you have here, there must be a great deal more, and something more than can be provided for by mere legislation. You can legislate a safeguard upon a machine, but you can't legislate brains into a man. You can legislate protection for a dangerous place, but you can't legislate conscience; and brains and conscience are today the bigger part of the problem in accident prevention work, We, therefore, feel that in addition to the safeguarding, there must be organization; for without organization it would all be unavailing.

Anything that has to do with the masses, anything that has to do with a large number of people, must be done, if it be successfully done, in an organized way. And it is for organization that the National Safety Council stands. It stands for the other elements of accident prevention work, of course, but we believe primarily in organization and education. We believe in organization in the individual industrial plants; we believe in organization in community safety; we believe in organization in State safety; and so it is that

through our organization we provide for local Safety Councils, local organizations among the members of the National Safety Council, which can in the several communities where they may exist promote not only industrial, but public and individual and home safety as well. It is the aim of the National Safety Council to have as many local Councils as there may be industrial centers, or as there may be large communities where the public safety problem exists. It is hoped that through the influence of the National Safety Council each one of these Local Councils may become a force in its particular community.

Through the Headquarters of the National Safety Council, it is expected that each Local Council will keep all others advised as to its activities, and may itself be constantly advised as to what every other community may be doing throughout the country. That is one of the primary objects of any organization that aims to carry on a work of this kind. It is absolutely essential, because the knowledge as to ways and means is not in the brain or mind of any one man, or any one set of men; but only to the extent that the information available to each one is made available to all, can the greatest and best results be accomplished. It has been extremely gratifying to the National Safety Council to have had the hearty support that we have had in our organization from the Department of Labor and Industry in this State, and from its able Commissioner, and its Assistant Commissioner, and from the members of that Department. It is equally gratifying to us to endeavor in our small way to co-operate with him and his Department in the work he is so ably putting forward in this State. If we have not co-operated so far as we might have, we hope that he will give us the opportunity to do so in the future, and it is my pleasure to pledge to him and his Department every bit of co-operation that may be possible from the National Safety Council and from every one of the local Councils in the State.

The meeting tonight I am advised is to have two phases, one to include the papers and addresses as indicated on the program, the other to be a sort of experience meeting of Local Councils of the National Safety Council. It has been thought advisable to hear from the several local Councils in the State of Pennsylvania as to ways and means that may have heretofore been adopted, or that may be in mind for adoption, in the several communities where the local Councils exist, for the general advancement of Industrial and Public Safety as well as for co-operating further with the State Department of Pennsylvania. To that end, I am advised that it is the desire of those in charge of the program, and it certainly meets with my approval, that we hear from these local Councils along this line. There are five of them now existing, and one in embryo that I shall speak of later. Local Council No. 1 happens to be your own Harrisburg Local.

I should like to hear from Harrisburg Safety Council, No. 1, through Mr. R. M. Pennock, its President.

MR. PENNOCK: As President of the Harrisburg Local Council, I wish to welcome all the members of the National Safety Council who are in attendance at this session. The Executive Committee of the National Council is now holding a meeting in Harrisburg, at which practically all the national officers are present, and I wish particularly to extend a most hearty welcome to you, Mr. President, and to your Executive Committee.

The Harrisburg Safety Council was the first Local of the National Safety Council to be organized. It was organized for the promotion of the safety idea in this vicinity. It has for its object not only safety in the industrial plants of the vicinity, but also safety on the street and throughout the community.

This week the Council is showing a large number of safety slides to the children of Harrisburg. It is felt that a very important start toward developing the safety habit can be obtained by teaching the children, and these films deal principally with safety on the street and the dangers from carelessness in playing around railroad tracks, cars, etc. The pictures are accompanied by talks by national authorities on safety. Mr. Brownell, a member of the Chicago Local Council, and several other equally competent men are explaining the importance of this work.

In concluding, I wish to call the attention of the members of the National Safety Council to the exhibit which the Pennsylvania Safety Council have at the Exhibition Hall, and hope that all the members of the Council will make this place their headquarters while at the Exhibition.

The CHAIRMAN: The Lehigh Valley Local Council, No. 5, is represented by Mr. W. F. Roberts. Will Mr. Roberts make a brief report for the Lehigh Valley?

MR. ROBERTS: The Lehigh Valley Safety Council, No. 5, is one of the earliest and most progressive Councils. The National Council itself is not a very old organization, and we got our local organization started very shortly after joining that.

I shall not attempt to go into the question of the value of Safety Council organizations and their effect upon the whole problem of safety and welfare of employees of industrial concerns of this country, as this matter has already been covered by the Chairman of the meeting. I shall, however, say just a few words about our Lehigh Valley Council No. 5, which is our local council, and which I represent as its President.

Our Council is composed of representatives of industries in Allentown, Bethlehem, Easton, and surrounding country; such as the Bethlehem Steel Company, the New Jersey Zinc Company, and a number of big cement companies, standing for about 40,000 or 50,000 workmen. There are thirty-four industrial memberships, representing practically every concern in the district. The Council itself has had a year of successful work.

Prof. Geo. W. Case, Pittsburgh Council No. 6:

We were organized last spring, and are planning our work along three different lines. We have plans made to carry on the regular safety-appliance work, for although some of the companies that have been most prominent in safety work are located in the Pittsburgh district, yet there are some small companies there that have done very little, if anything. We, therefore, plan to have round-table meetings, to make it possible for those who have really done something to tell those who have not done anything, what their experience has been. Those men around Pittsburgh to whom I have talked, seem to think that the round-table meetings are the most important ones.

It has been possible for them one time or another to hear what the different industries have done in safety work. But they have difficulties of their own. They have tried to put into practice certain things, and have found that their men don't seem to take interest in them. One young fellow told me the other day that he had trouble to keep his men from walking under loaded cranes, and would like to have some one tell him what his experience had been, whether it is necessary to place watchmen, or whether he can say something to the men that will make them feel it is necessary to keep away from that particular place. It doesn't seem possible for him to say, "I'll fire you if I catch you walking under a crane," because when they are busy that is the time he needs them most, and when they are not particularly busy it isn't hard to keep them from walking under the cranes. The round-table meetings would give him a chance to ask questions, and the experience of one would be passed on to others.

The sanitary branch will give lectures on sanitary subjects in some of the industries and in localities adjacent to them, to get the people interested in proper sanitation, in personal hygiene, and in keeping the grounds clean and the plant in good condition. Our other plan is work with the children. Mr. Clifford B. Connelly who is very enthusiastic in safety work, has been organizing the school-children, to get them interested. We know that in some cities there have been a great many people killed on the streets, and the number is largely made up of children who run across the street as a car or vehicle passes, and are apt to be injured or killed. We plan to use motion-

pictures in calling the attention of the children to the dangers of the street.

Dr. F. D. Patterson, Philadelphia Safety Council No. 7:

We are trying to advance the safety movement by having meetings at the Franklin Institute, at which we have lectures by those foremost in this movement.

On Monday, I had the pleasure of receiving word from Director Porter that he had seen fit to appoint a committee, which is largely composed of members of our local Council, to take up and investigate the question of the frightful slaughter of people upon our public highways. This was all brought to a crisis by the fact that we had eight fatal accidents in twenty-four hours. A great many people are killed in this way but like the industrial accidents, it passes unnoticed. Street accidents were heard very little of, and occupied very little space in the newspapers; but when eight lives were wiped out, the newspapers took hold of it, the Mayor was aroused, and sent for the Director of Public Safety. In an effort to solve the problem the Director has appointed this committee. I want to say on behalf of that committee, if anybody here, or anybody who may hear what I have to say, has any suggestions to offer for the conservation of human lives, please do not hesitate to send the word along. We want all the help we can get, because Philadelphia feels it owes every school-child, every inhabitant a duty, that each person may traverse the highways in safety and go to his daily toil without risk of accident. If any of you have any suggestion to offer, send it along; it will be promptly answered and be very greatly welcomed. In the meantime, our activities will go on, and we hope to make Philadelphia one of the safest places in Pennsylvania.

Mr. J. S. Pendleton, Reading Safety Council No. 16:

The Reading Local Council was organized in September, and had only two meetings. Although located in a very conservative community, we are doing our very best to arouse interest. It is a hard task, and a slow one; but when we once get the people aroused, they are going to stay aroused for they are that sort of people. We desire to arrange very shortly for a general meeting, so that all our working-men can have an opportunity to see what has been done in the line of safety. We also are going to approach the school authorities in an effort to carry instruction among the school children. Reading has had some fatal accidents to school children on the streets and the plan I think will therefore develop very rapidly. Our membership is as yet small. We have twelve industrial and public-service corporations interested, and a number of private members, and I have information this evening that the Local of the Motion Picture Exhibi-

tors' League of Pennsylvania are going to unite with us in our work. Reading, though it can't say much for itself at present, by next year I hope will show good progress in the promotion of safety.

The CHAIRMAN: An application for a charter for another Local Council at York, will be presented to the Executive Committe at its meeting tomorrow, and will unquestionably be acted upon favorably. There are more Local Councils from the State of Pennsylvania in the National Safety Council than from any two States in the Union. In Pennsylvania you have a very active safety sentiment; and I am satisfied that your Department of Labor and Industry is very much pleased, because it is by this sentiment, and by the co-operation of the individual industrial concerns, that it can accomplish the best results. Each Local Council should give to the Department hearty support, and aid it wherever possible.

We are to have as our next paper, "The Value of Comprehensive Statistics in Safety Work" by Mr. R. H. Newbern, of the Insurance Department of the Pennsylvania Railroad Company.

THE VALUE OF COMPREHENSIVE STATISTICS IN SAFETY WORK.

R. H. Newbern, Superintendent, Insurance Department, Pennsylvania Railroad Company.

When the Pennsylvania Railroad began a systematic effort to reduce accidental injuries to its employees in 1910, one of the problems was to develop an accurate system of personal injury accident statistics. The first step was to devise an accident report which would clearly show the primary cause of the accident and other information as to whether any rules were violated, who was responsible, what discipline was imposed, what guards, precautions or instructions, would have prevented the accident and what action was taken. A form of report was finally adopted in 1911 containing 29 items of information and is standard on the Pennsylvania and its affiliated lines.

On its eleven thousand miles of line subdivided into fifty-one Divisions, each being a distinct unit, there are employed normally two hundred and twenty-five thousand men; the service performed includes carrying over one hundred and eighty-five million passengers and three hundred and eighty-five million tons of freight annually. At present there are forty-three thousand reports of injuries to employees and six thousand to passengers and others received yearly,

including injuries involving no loss of time. In order to simplify the handling of this large number of reports, the "Hollerith" system was adopted and a code prepared, showing causes, nature of injuries, occupations, locations, days' disability and other items of information necessary in the analysis of accidents. As the reports are received they are codified, and a permanent record of the accident is transferred to a card by means of a punching machine, and when data are needed the cards are sorted by means of machines and the desired information obtained quickly, accurately and economically.

For statistical purposes employees are separated into two classes, one, employees in the maintenance of equipment, commonly known as Shopmen, and the other, all other employees such as Trainmen, Maintenance of Way Men, Station Men, etc., designated as Road and Yard Men.

The statistics provide for the following information: the number killed and injured by detailed causes, nature of injury by cause and occupation, length of disability, occupations, length of service, time of day or night, weather conditions, divisions, grand divisions, shops, and large stations and yards.

The statistics are compiled on the same basis for shop, and road and yard accidents, excepting as to detailed causes, there being three hundred and sixty shop causes and three hundred and forty road and yard causes, making seven hundred separate causes of accidents. The causes in turn are classified under thirty-six general headings which indicate the nature of the work at time of accidents. These general headings are as follows:—

For the Shop: operation of machines and working of material; repairing locomotives; repairing cars; handling and use of hand tools; handling and use of jacks; handling material; trucking material; tools and material falling; working around turn-tables, coal docks, ash pits; operation of cranes, hoists and other devices; obstruction and material in aisles, passages and footways; defective floors and footways; erection of scaffolds and working on same; ladders; electrical; handling ice; getting on or off engines or cars at rest; getting on or off engines or cars in motion; and causes not otherwise classified.

For the Road and Yard: getting on or off engines or cars at rest; getting on or off engines or cars in motion; setting and releasing hand brakes; coupling and uncoupling cars or engines; connecting and disconnecting steam and air hose, including operating angle cock; accidents on or around locomotives; operating switches; handling baggage and mail and baggage trucks; falling in ash, turntable and inspection pits; slipping or tripping on coal wharves, platforms, walks and bridges; working on or around engines, cars or trains; crossing or walking in yards, or on tracks or bridges to and from

work; insufficient clearances; obstructions around tracks and in yards; loading, unloading and handling freight, etc., at freight and transfer stations; working on or around tracks and buildings—including loading and unloading; and causes not otherwise classified.

By comparing the number of accidents under each general heading, we ascertain what kind of work is the most hazardous and the specific cause under which the accidents are reported. The primary cause of every accident is indicated. The records are kept by Divisions, Shops, Stations and Yards and it is, therefore, easily seen at what points any particular kind of accident is most frequent.

There is included in the statistics additional information bearing an important relationship to accident frequency, such as the average age of employees, length of service, etc. Regarding the length of service, it was found that during the year 1913 there were ninety thousand new men employed, although the total increase in the number of employees for the year was less than nine thousand, the greater number of transient employees being in the Maintenance of Way Department. The statistics developed the fact that during the year twenty-five per cent of the men killed and injured had less than six months' experience and that twenty-eight men were killed and two thousand three hundred and ninety-one injured who had been in the service less than thirty days. Assuming a similar experience on all the other railroads of the United States, at least three hundred and sixty men were killed and fifteen thousand injured last year, having less than one month's experience, and many met death during their first week's work,—not because they were careless or foolhardy, but because they were ignorant of the hazards of the work. It is recognized that the education of employees is one of the most important features in safety work, but the large number of transient men makes this educational feature a difficult problem. Experience also indicates that it is very necessary properly to instruct the new man as to the hazards of his occupation before he is permitted to be placed in a hazardous position.

A business employing men in more than one hundred occupations will be unable effectively to teach the doctrine of safety unless some means are provided to discover the number of injuries sustained by men in each specific occupation. The statistics, therefore, are so arranged that the number of injuries and fatalities can be shown in each department and in each occupation of the various departments, also the reports are tabulated to show the specific cause according to occupation. This information will of itself suggest definite instructions along safety lines. The number of accidents occurring during each hour of the day or night is shown, as the time of the accidents suggests various preventives, such as improved lighting facilities and rearrangement of working hours.

The statement of so many men injured on railroads during a certain period, does not convey an adequate meaning, it is the loss of time that shows what the employee really suffers. Therefore, the statistics provide for the number killed, the number injured, the number of indefinite injuries and actual number of days lost. The statistics include all accidents resulting in a disability of one day and over. It was found that twenty-one per cent of the total number of accidents resulted in three days or less disability.

Our statistics also show the nature of the injury; this information embodies one hundred and forty-one different kinds of injuries included under the following general headings: amputations, eye injuries, sprains and strains, bruises, incised wounds or lacerations, fractures, electrical shocks, burns, dislocations, and injuries not included above.

This information enables the management to study methods of treatment to reduce the length of disability. There were seven hundred and fifty-eight fractures last year resulting in nineteen thousand, one hundred and ninety days of disablement, eighty-seven indefinite disability cases and fifty-three fatalities. The necessity for the best treatment of these injuries is recognized as fractures may result in extended disablement on account of improper treatment. There were one thousand, seven hundred and sixty eye injuries last year resulting in eleven thousand, five hundred and one days disability, which of course indicates the importance of using goggles in certain kinds of work. It may be added that goggles are furnished without cost to all employees whose duties render them necessary.

The value of accident statistics depends largely upon the remedial action they suggest, and the Safety Inspectors by analyzing these statistics become familiar with all the hazards of operation and such knowledge has been found invaluable in inspection work.

Statistics also form an important feature in the operation of a safety organization, based on the theory that what has happened is a reliable indication of what will happen. They are also valuable on the educational side of the question as they show each man the causes responsible for accidents in his particular line of employment, and it is the practice to attach to all inspection reports, statistics of all accidents occurring at the points covered by the inspection. Experience clearly indicates that comprehensive accident statistics furnish a most effective means of suggesting remedial measures in accident prevention work.

CHAIRMAN: Dr. Patterson will now present several motion picture reels; one, a fire reel, one showing several railway accidents, which will supplement Mr. Newbern's paper, and one reel on safe

and unsafe practices. We turn the meeting over now to Dr. Patterson, and the meeting will stand adjourned at the conclusion of his three motion picture reels.

Dr. Patterson's motion picture reels were then shown, after which the evening session of the Conference adjourned.

WELFARE SECTION.

Wednesday, November 18th, 1914, 9:00 o'clock A. M.

Mr. L. R. PALMER, Chief Inspector of the Department of Labor and Industry.

The time for opening our meeting has arrived but the gentleman who was to preside as Chairman, is not present. However, I have found a most able substitute, Mr. Louis F. Post, Assistant Secretary of Labor, Washington, D. C., who will take charge of the program, and I am sure you will be very glad and feel that we are fortunate in having him with us.

MR. LOUIS F. POST, Assistant Secretary of Labor, Washington, D. C.:

The subjects this morning are, "Immigration" and "Child Labor Legislation." It so happens that both are within the jurisdiction of the Department of Labor of the United States. There is, therefore, some propriety in my presiding.

The question of Immigration, I suppose, is, in a general way, pretty familiar to you all. If it is not, you will have to wait for the speakers; I do not intend to take their places. There is this much, however, that I can say: We have coming into the United States something like one and a half million aliens a year. This has been reduced now very materially in consequence of the war. Of those

that come, about two per cent are rejected and about ninety-eight per cent are admitted. There are two general views with regard to the administration of the Immigration Service. One is to devote all attention to keeping out the two per cent, expending all the money and all the energy on them, and nothing on the ninety-eight per cent that we let in. Another view is to give all attention to the ninety-eight per cent that we let in and hardly any to the two per cent that we keep out except to keep them out. Still a third view is to bring the two general ideas together and try to be humane in our exclusions and sympathetic in our attention to those we admit.

The Immigration Service, as some of you may know, is divided into districts. The most spectacular of all these divisions is that at Ellis Island, which is the alias for the New York Station. Another is at Philadelphia. It is really located at Gloucester City, New Jersey, but is known as the Philadelphia station. The divisions into districts are not made according to political divisions, but with a view to convenience with reference to ports of entry for foreigners.

A movement has already efficiently begun with a view to the interior distribution of aliens. Some two or three years ago a provision was made for an Interior Immigration Station at Chicago. The law provides for Interior Immigration Stations, but it did not appropriate any money for one. Appropriation bills, however, have now provided not very liberally, although liberally enough for all the business we have yet been able to do there. That station is built; is in good condition; is a very excellent hotel in its way; but it is absolutely empty of immigrants. The difficulty seems to be this: That the railroad tickets carry the immigrants to Chicago. There they are discharged and can go their way at the railroad stations. Arrangements were made to have the local transfer agency carry them for twenty-five cents a head to the Immigrant Station; but they had apparently heard of that great industry in Chicago of exhibiting the outside of the Masonic Temple at twenty-five cents a head. They seemed to connect this with our interior station enterprise and wouldn't pay the quarter. The Secretary of Labor has now succeeded in arranging with the railroads for a coupon to the ticket from New York on account of which the immigrant gets free transportation from the terminal station of the railroad at Chicago to the Immigrant Station. He will be discharged at the Immigrant Station unless he is passing through to some distant place. We hope that in time this plan may develop the utilization of the interior stations and the Immigration Service into a system of labor distribution of a kind that will be beneficial to the alien. beneficial to the citizen and beneficial to employee and employer.

Mr. Elmer E. Greenawalt, Commissioner of Immigration at the Port of Philadelphia, has now arrived and will address us on the subject of "Immigration."

IMMIGRATION.

Elmer E. Greenawalt, Commissioner of Immigration, Philadelphia.

The immigration question is one that has long engaged the best thought of our citizens and statesmen. From time to time as sentiment crystallized, old laws governing the admission of aliens were amended and again new ones enacted. However, in the earlier days of our country, before population became so dense, immigration was encouraged and the class of aliens who came to our shores in those days were readily assimilated and were an important factor in developing our sturdy citizenry. Today conditions are different, and different races from those of the old immigrations are arriving in America.

During the past eleven years nearly 11,000,000 immigrants have passed through our ports,—1,218,480 came in the fiscal year ending June 30, 1914. It may be illuminating to know that 251,600 were Southern Italians, 138,000 were Hebrews, 122,700 were Poles, 79,900 were Germans, 51,800 were English, 45,000 were Russians, 44,450 were Magyars, 44,800 were Northern Italians, 33,900 were Irish, 19,000 were Scotch and 18,170 were French.

Of course, immigration fell off at once at the outbreak of the European war. From August 1 to October 7, 1913, immigrants to the number of 310,452 entered the United States. During the same period this year, the number was only 89,789. What effect the war will have on immigration in the long run is conjectural. There are two theories. It is argued that the men and women of Europe, worn out, stricken with poverty , burdened with sorrows, fearful of other wars will come in immense numbers to the United States. On the other hand, it is maintained that ruined Europe will have to be rebuilt, and that work at good wages will be abundant for all able-bodied men.

In this connection it may be remarked that conditions were normal in Europe for the year ended June 30, 1914, yet 6537 aliens, who were mentally or physically defective, attempted to enter the United States. Also there came 15,705 who were likely to become a public charge; 3254 who were suffering with loathsome or dangerous contagious diseases; 1077 who were idiots, imbeciles or feeble-minded; 755 who were criminals; 634 who were habitually immoral, and 232 who were insane or epileptics.

All of these immigrants were stopped. But at least 4610 aliens whom the laws excluded, got through, and getting through, were afterward taken into custody and returned to Europe. Eight hundred of them were found to be insane; 1356 were of the kind likely to become public charges and 700 men and women belonged to the class that operates in the redlight districts of large cities. Undoubtedly, hundreds of immigrants barred by the laws of this country, originally passed inspection and are now living by hook or crook, in one place or another.

It may be of interest to note that of the aliens debarred, 5964 were Southern Italians, 2491 were Hebrews, 2184 were Greeks, 1896 were Poles, 1808 were English, 1596 were Russians and 1375 were Germans. Three hundred and thirty had been "assisted"—that is, their passage had been paid by others. Most of them were incapables whom their relatives or villages wanted to be rid of.

Such, then, are some of the immigration figures for a year that was not unusual in any respect. Officers of the Government in Washington believe that the European war will immensely increase the number of undesirable immigrants reaching the Atlantic ports of Boston, New York, Philadelphia, Baltimore and New Orleans.

The facts and figures just quoted, shed considerable light on the subject of immigration, and can lead to but one conclusion which plainly stated is, that we are no longer able to assimilate the horde of aliens that in normal times annually enters the United States, and overcrowds the labor market. And as Secretary of Labor Wilson, in a recently published interview so pointedly remarked: "An excess of labor means of course, that under the pressure of competition, wages fall or that the days of work are reduced, and logically, that the standard of living is lowered. When such things happen, a community is not in a sound economic condition."

The economic welfare of a country is unquestionably measured by the success of its workers, and it is the patriotic appreciation of this fact and not selfishness, that prompts labor and those interested in its behalf, to insist that more stringent laws governing the admission of aliens be enacted. It may therefore be readily understood that the chief objection to abnormal or unrestricted immigration is the effect it has upon the American standard of wages and living obtaining among our working people, both skilled and unskilled.

The congested condition in our large industrial centers already threatens to disturb the equilibrium of our industrial economy, and it seems therefore that further regulation of and reduction in volume of immigration from foreign lands would serve as immediate expedients to remedy that which particularly in the cities, has already developed into an admittedly difficult situation.

We cannot, of course, by any enactment of law, prevent our people from flocking to the cities, however desirable it might be to have them remain on the farm and in rural settlements, nor can we very readily overcome the same tendency among the incoming aliens, to mass themselves in the already overcrowded centers of population. We do, however, possess the power to regulate their coming.

How, and in what way we can regulate it, is, of course, a mooted question. Organized labor, as represented by the American Federation of Labor, which speaks for more than two million members and many additional millions who are dependent on these members, favors the "literacy test." While much can be said in favor of this, and no one has yet come forward with a proposal that offers a more effective remedy for excluding undesirable aliens, it may be said to have some drawbacks.

As a rule, the admitted alien must, because of lack of knowledge of the English language and of American conditions, earn his living by manual labor. This fact, in itself, emphasizes the importance of his being at least physically sound, for, after all, whatever other qualification may be required, manhood should be the final test of admission. This latter would perhaps constitute the ideal way of sifting immigration so as to admit none except altogether desirable aliens with the requisite physical, mental, and moral qualifications.

It therefore follows, irrespective of whether or not the "literacy" test is finally adopted, that the concensus of opinion in regard to foreign immigration appears to be, that the standards of the law regarding physical and moral qualifications of the immigrant should be materially raised, and that the machinery for the enforcement of the law should be extensively improved.

Mr. H. H. WHEATON, Supervising Investigator, Department of Labor and Industry, of Pennsylvania:

Mr. Chairman, would you kindly ask Miss A. M. Siebert and Miss R. W. Ball to make some remarks on the subject of Immigration. They have been investigating along these lines for the State Department of Labor and Industry, and I think some of the local conditions ascertained by them will be of interest to the Conference.

MISS A. M. SIEBERT, Special Inspector and Investigator, Department of Labor and Industry, of Pennsylvania:

In going over the territory assigned to me, which comprised the anthracite coal communities, that are, as you know, made up very largely of the foreign element, I naturally had many varied experiences. Incidentally, let me say that if any of you feel that you are being misused and the other fellow has a lot nicer time of living in

this world, drop everything and take a trip through any of the countless mining towns. I venture to say, you will take up your own burdens, wondering just what you had done to deserve such a good lot.

I want to tell of one experience that I had and shall never forget. I was passing through a mining town on my way to a railroad camp that was located half-way up the mountain side where I had heard were forty Hungarians and Russians with one woman to cook for the whole forty. On the way out of this town, at the outskirts, I noticed a large culm pile, probably forty-five feet in height, and on looking up I noticed there were some sheds, or at least what looked like sheds. I asked the girl with me, who was a nurse, "What are those sheds used for?" She said, "There is a colony of people living up there." I asked, "What kind of people?" "They are only Slavs," she answered. I said, "I want to go there; how can I get there?" She answered, "By walking up the culm pile." I walked up. Half-way up I got a nearer view of the sheds where these people, human beings like ourselves, were housed, just like so many cattle. I walked up farther and there were five sheds of perhaps one story in height, built of clap boards with big knot holes, which were covered with paper. The foundations were some stones. The playgrounds for the little children were made up of great pieces of slate, culm and broken beer bottles. I found that the sheds were locked. In one of the sheds the windows were open and two or three children were playing inside. I coaxed one little boy out. He said the only way he could get out was by coming through the window, which he did. I asked him where his mother was. He said, "Out berrying." I asked, "Why are you not at school?" He said, "I have to take care of the babies." "How many are there?" I asked. He said, "Three." "Are you locked in?"—"Yes."—"Have you no one to watch out for you?"—"No." "Where do you play?"—"Here," indicating the playground I have described. I finally found a woman who could speak a very few words of English. I spoke to her and got this information: I asked her what her husband was doing. "Working in the mines," she said. "How much rent do you pay for these houses?" I asked. "Three dollars a month," she answered. "Do you pay it yourself?" "No," she said, "It is docked at the office." I asked, "How much money does your husband bring home at the end of the month?" She said, "Sometimes little, maybe nothing."

This is only one phase of the conditions we come in contact with—the way the people are housed in company shanties. There were six people living here in a shanty three rooms deep; no comfort, no incentive to better living. The only way the children could get down to the town to play with the other children was by going down the steep culm pile. I used to think, as many do yet, that these foreigners wanted to live that way and why should we bother about it. My

work among these people during the past few months has opened my eyes. It is absolutely immaterial as to whether or not they want to live that way—as for that matter, many Americans live much worse with better facilities—it is the State's business to see to it that they are taught better standards of living and that there are at least decent places for them to live—for they pay dearly for what is given them in the majority of instances. I believe one way of solving this very serious problem is the Social Center. The foreigners are very clannish and like gathers with like, so that in this way, opportunities of learning American standards of living are very slight. The greatest help along this line is getting the children in our Public Schools. They learn very quickly and then try to pass the learning on into the home. This is the most effectual method towards Americanizing a whole foreign community.

MISS R. W. BALL, Inspector, Department of Labor and Industry, of Pennsylvania:

A year ago when I began this work, my first instructions were to find out what was already being done for foreigners in Pennsylvania. I began this investigation in Philadelphia.

First, I visited the wharves, and learned something of the methods of inspection, and also of the social work done to aid the immigrants. There were representatives from nineteen different societies at the docks, and all of them, with probably one exception, doing work of a religious nature, and dividing up the newly arrived immigrants according to the churches to which the workers belonged. This in itself was all right, but was apt to leave other sides of the problem a little neglected.

Throughout the city I found a number of societies working for foreigners, each in its own way. There were also a number of good night schools; but considering the size of the foreign population of Philadelphia, and the numbers who cannot speak English, the educational work needs to be greatly enlarged.

There is a splendid public night school for adult Italians run in a very systematic way. This school has a fine principal; and both the principal and all of the teachers know enough Italian to get along very intelligently with the pupils who attend the school.

There is a foreign college in the city that is very ambitious for the welfare of its own race, but it has not been greatly patronized, possibly because the grade of instruction is not of a character to be of immediate practical value to the majority of its people.

After I had made a study of the societies and schools, and had also listed the chief foreign districts, and the races found there, and had studied groups of some hundreds of families of each race as to their general living conditions, I was at a loss as to what next,

when Mr. Wheaton came to us, and suggested the Community Schedule, a questionaire which was to be used as a preliminary inquiry into the condition of aliens, in small cities, towns and boroughs.

With the Community Schedules, Miss Siebert and I covered the eastern half of the State, that is—cities and towns that had any considerable foreign population.

These schedules are very comprehensive, but require only the most important facts concerning each subject. They ask first about the town organization, then about the alien quarters in the town, what sort of houses, of what structure they are, in what condition of repair, what different nationalities are living in these places, what sort of sanitary arrangements, what sort of inspection provided by the town. They ask about the presence of private bankers, and of steamship agencies, about employment agencies, about immigrant lodging places. They ask about the school facilities for foreign children and also for adult foreigners; and also ask to give lists of the social organizations in the towns and what they are doing for immigrants. They ask concerning industrial conditions, and the presence of any special welfare work in the industries, which would be of assistance to the foreign workmen. They ask for statistics as to naturalization.

In regard to this last matter, we find in almost all the places visited, an appalling discrepancy between the number of aliens, and those who are naturalized or who have first papers.

We find in the schools very little done for the adult alien. Small towns that have hundreds of foreign men needing the teaching of the English language, have no classes for such work. A considerable amount of work, however, is done for the children.

There is scarcely any social work done for foreign communities. In one city I found that there had been for two years previous, a very flourishing social center in one of the school buildings, the only work of its kind for a population including over ten thousand foreigners. This centre was about to be closed by the Board of Education, and two women who were interested, wept when they spoke of this calamity. This is my one experience with such a display of feeling as regarded the welfare of the aliens.

Now we are busy with reports on what we have found in the eastern part of the State, and when these are finished, we expect to go into the western part. When the principal places there are visited and results compiled, we shall hope to have better ideas as to the needs of our foreign friends who live among us.

JOHN PRICE JACKSON, Commissioner of Labor and Industry of Pennsylvania:

Yesterday morning in my talk about the work of the Department, I brought to your attention what I shall emphasize this morning—

the need of educational facilities for the immigrant and the reason therefor. Land ten thousand people, human beings, in a new country of which they know nothing; people brought up to think and act in an entirely different way from those with whom they are now concerned; people whose form of government has had entirely different ideals; and people, moreover, who cannot speak the English language; place these people in our industries and you have there a group of an unwieldy nature that cannot fail to be of serious injury both to the employer and to the employee who is normally in that country. If we were all to be landed in France or Germany—assuming for the time being that there is no war—in spite of the fact that the people assembled here are of a much higher average intelligence and mental training than most the immigrants—possibly no more ambitious, possibly having no higher moral qualities—we should be rather worthless, to either Germany or France, for quite a period of time. Now then, bring in these tens of thousands who have had as a rule very little education in their own counties, who have been only unskilled laborers; they know nothing of the conditions or ideals of our government; they do not know our language and they are subject, therefore, to leadership by the irresponsible. An unscrupulous foreigner who has been in this country long enough to speak English, and who can also speak the language of the new arrivals, is able to lead these ignorant ones into any sort of trap, because they cannot get information from anyone but a man who can speak their language. A lack of watchfulness on the part of our own people allows a constant exploitation of our immigrants.

The education of the adult immigrant is one of our greatest duties. I understand that our School Code gives an opportunity for special school facilities for the adult immigrant—not for the children, they can go to our schools and get fairly well trained—but it is the adult that our School Code gives an opportunity for teaching. Nevertheless, you must appreciate that it means an extra burden on the community to have such schools. I have heard that in Philadelphia, in one of the districts, they have a couple of immigrant schools, but that the immigrants don't go to them in great numbers. If this is the case we must make further effort to attract them. In a city in another state, the school system carries the school facilities to the lunch hours in the works and uses other methods whereby they bring the school to the place where the immigrants are, and teach language and civil government. This is for only a few minutes each day, but by persistent effort on the part of the teachers, the immigrants are speedily taught the fundamentals of the English language and the duties of citizenship.

I believe the members of this Conference can well argue, throughout the State, the advisability of our State School Systems taking up the project of using every possible method of getting the newly

arrived immigrant into such schools as will enable him quickly to become an intelligent unit in our Pennsylvania civilization.

I think, Mr. Chairman, it might be desirable to call on Mr. H. H. Wheaton, who is in charge of the women who have just spoken and who is here both in his official capacity for the Department and also in the capacity of official representative of the North American Civic League for Immigrants. He is very familiar with the investigation work going on in this State.

CHAIRMAN POST: Perhaps Mr. Wheaton will take the floor at the Commissioner's suggestion.

MR. H. H. WHEATON: Under the Act creating the Department of Labor and Industry, passed last year, the Bureau of Statistics and Information was given special authority to make an inquiry into the conditions and welfare of immigrants throughout the State. This power is not particularly extensive. It goes no farther than to authorize investigation, except that it permits the Commissioner to bring into communication the immigrants entering the State and the industries most requiring alien labor. Other than these two special powers, investigation and, in a sense, an official employment agency, no power is given to make adjustments with reference to complaints; no power is given the Department to follow up malpractices and prosecute offenders; no power is given the Department to act as a quasi court to hold hearings and take testimony, etc., in reference to the causes and complaints of immigrants. So you see that our powers are considerably limited. I understand that originally the bill creating the Department did include extensive powers along these lines, particularly such powers as are given the New York Bureau of Immigration, created two or three years ago. The scope of these powers was thought to be too large to undertake at the time the bill was passed and only the powers I have mentioned were given the Department.

Now under those powers we have conducted an investigation of the condition and welfare of the immigrants in the State so far as we could during the past year. We have gone into the matter, first, of the relationship existing between the State and the immigrant; what legislative provisions favoring, protecting, or discriminating against the immigrant have been passed by our State Legislature and have been adopted by various departmental bodies. We have gone into the educational relationship, which the State bears to the immigrant. We have gone into the matter of health and sanitation, so far as this concerned the State in its relationship to the immigrant.

Then, we have investigated the relationship existing between business and industry and the immigrant. We think it is probably one of the most important things to ascertain in the very first instance in what employment the immigrant is engaged and what the terms of his employment are and what are the conditions under which he is employed. Following that, we have been investigating the condition of the immigrant with reference to the various lines of business which are exploiting him or taking advantage of him, such as the steamship ticket agency, the private bankers, etc.

We have gone into the matter of the immigrant and the private agency and private organization, finding out, as far as possible, all the agencies which are dealing with the immigrant in any way, particularly those which deal with the immigrant in an educational way.

When we have endeavored to go into the general social and living conditions existing among the immigrants themselves with reference to housing, inter-communication through the foreign press, and foreigners' societies; so that you will see we have endeavored to obtain information regarding the immigrant which seemed to be the most important and most vital. We have not, however, on account of our limited force, been able to cover the entire field.

Now we have found, in the first place, that in the State of Pennsylvania, with perhaps the exception of one or two cities, there is not a real, genuine, substantial appreciation of the problem of immigration. We have found considerable racial prejudice against the immigrant. But what is worse—we have found an apathy and indifference on the part of the American towards the immigrant. We have found the attitude which regards the immigrant as a chattel upon the labor market, a man whose labor is to be purchased to be used for the benefit of the State, of the State's industries, and the State's business, without thinking of the man himself—the humane side of the proposition; and that, to me, is most fundamental.

We must learn to appreciate that the immigrant is, first of all, a human being; that his labor is second on the list; that he is first to be considered as an asset in the community, for without him, many of our industries would have to close their doors. Proof of this is seen in the fact that a large proportion of our employees in the State are of foreign birth. In the early days our employees were mostly English, Welsh, Scotch, and Irish, but since about 1890, the predominance has been in favor of continental Europe, particularly Southern and Eastern Europe. About 1900, the races from Southern and Eastern Europe began to supersede the English-speaking races that were coming in. Today we receive approximately seventy-five per cent from Southern and Eastern Europe and from Asia. Last year there were admitted to the United States and destined to the

State of Pennsylvania as the State of intended future residence, no less than 184,438 immigrants. Most of these were from North and South Italy—the number was fifty to sixty thousand—from Poland, Russia, Croatia, and other Eastern and Southern European and Asiatic countries. These are the types of immigrants we are getting at the present time. Now these immigrants are going into your industries. More than two million, who have come in during the sixteen years, have gone into your industries, and they today constitute the backbone of your labor market. If it were not for the immense number of aliens who are furnishing labor for many of your industries—for we have received the reports direct from the industries themselves and we know what a large proportion of the foreigners are employed in the industries of the State—I can safely say that many of the industries of the State would be compelled to close their doors. The native American labor is not adequate to meet the needs of the hour.

Now we have found, in the second place, that the immigrant in the State is not receiving the educational opportunities which he ought to receive. Some people think that the matter of educating the immigrant is to be left to private agencies, but the chief criticism of this practice is the lack of standardization in the education which is given. You will immediately comprehend that the agency over here which is teaching the immigrant English and the agency over there which is also teaching him English, and perhaps a little civics, take different points of view. They have different ideas with respect to instruction. They get different types of teachers. The one may have a foreign-speaking teacher and the other may not. The subject matter chosen by the one will be suitable to the adult immigrant; the matter chosen by the other, suitable for the immigrant children, but taught to the adult—this is a common fault. There is an utter lack of standardization as between the different agencies dealing with the immigrant educationally. Now until we provide a standardized educational system, with standardized facilities for the immigrant in the State, we shall continue to have the foreigner not adapted to his employment, to his environment, or to the specific community in which he resides, existing in it but not a part of it. The educational facilities hold the key to the situation in the Americanization of the immigrant in the State. Until we provide adequate night school facilities, at the proper hours, on the proper nights, with the proper type of teacher, the proper type of subject matter, the proper methods of instruction and the proper selection of setting and environment of such instruction, you will find that the immigrant of the State will not become a vital element in the community. You will find that he will sell his labor to the community, but he will exist apart from it.

THE FOREIGNER AND HIS BANKER.

LOUIS T. ROMANOLI, General Organizer of the Journeymen Tailors' Union of America:

I believe we should proceed in a systematic manner to distribute the immigrants, relieving them of the hardships that they have in finding work at the present time. I am a foreigner, as you know by my name, and I know the conditions as they exist. The Italian Government tried to handle the proposition and has spent quite a sum of money in the City of New York in establishing employment agencies endeavoring to take care of its immigrants, but through some mismanagement or political reasons that we all know to exist, the office was discontinued. The trouble is that the State while it is trying to safeguard the alien that goes to work in the factory, neglects the unskilled alien laborer that goes out in the country to work on railroad and on State work. I remember reading many accounts where these fellows had been burned up like rats in the shanties where they went to sleep, and what does this State do? Well, what of it? Fifteen or twenty foreigners burnt up; but another ship load comes over. There are plenty of them. We say that the immigrant refuses to assimilate. Surely, if you spit in my face and slap me, I cannot very well go with you. We despise them. I have gone through the mill and I know what it is. When you get the look and a hard name, the hard name is nothing. They immediately imagine that the man that looks with contempt on him is not his friend.

The immigrant wants to work. We come to the ticket agency or private bankers as you call them. They work this way: first of all they get the profit of selling the ticket to bring the immigrant here. When the man comes here, he has to apply to the banker for work. He has no other place to apply. The great industrial corporations of the state apply for men in those offices. They pay something to get the laborer and the laborer usually pays one dollar to get the job. That is not all. After the man goes to work on the railroad, what happens? The commissioner or banker has the privilege from the railroad to establish a commission store. Bread and all necessities of life are sold to the man from that store. If there is a village near by where he can buy his necessities of life any cheaper, he cannot go there, he will have to buy from this store or be discharged; and any of you that has not been a foreigner doesn't know how hard it is to get another job when you lose one; necessity compels that man to do as he is told. That is not all. If by chance and by great sacrifices, he happens to save a few dollars—what does he do? He proceeds to deposit that money in the hands of that banker, and what next?

The banker closes his doors. Oh my! He has worked, he has been robbed right along while working and when the banker closes his doors, the man has lost the few dollars he saved. Then he is left at the mercy of the next one, and invariably after that lesson, they will give him another one. Just because of the system of putting him to work, he is in the control of those merchants of human flesh. It is the duty of the State to protect him.

CHAIRMAN POST: The time is coming to a close for this subject. There has been a great deal of diffidence in participating in the discussion. Perhaps there may be those who wish to ask questions.

DR. FRANCIS D. TYSON, School of Economics, University of Pittsburgh:

I should like to take advantage of this opportunity to raise a broader question with regard to our immigration problem. As I see the situation now, it would seem that one of the few beneficial results which accrues to us in this country from the European catastrophe is the sudden cessation of our immigrant stream. This renders less pressing and perplexing the conditions which have been explained to us this morning as due to immigrant maladjustment. Take the figures of the port of New York, for instance. In September of this year but 20,000, approximately, entered as compared with 108,500 for September 1913; and in October, 30,000, as against 150,000 for the preceding year. This means a reduction in the amount of immigration to one-fifth of the usual strength. Of course it follows naturally that this cessation gives us our opportunity to adopt and push forward a comprehensive program of assimilation. I feel that it is very pertinent, therefore, that we should ask ourselves at this time—are we really taking advantage of our opportunity to carry forward these measures of relief, and seeking to learn how we may put before our people in a more effective way, the necessity of taking full advantage of this opportunity; for upon the building up of this mechanism for assimilating the subnormal elements in our populations, will in part at least depend the solution of the social problems we have been discussing at this conference.

From the broader national point of view I should like to ask a question which I think I can best put before you by saying that on the basis of past experience we know that the immigration into this country has largely been an economic movement, a readjustment of population levels from the lower level of the standard of living of Europe to the higher standard of the American population; the recent immigrant stream has regularly increased and decreased in direct relation to economic conditions in this country; and now with

the cessation of the war—this conflict, indeed, may continue for two years or longer—all evidence seems to point to the fact that we shall face a very sudden and perhaps unprecedented increase of the amount of immigration into this country. The destruction of capital and the interruption of commerce and industry will render Europe poverty-stricken. We may find many millions from all European countries crowding to our shores as soon as the struggle ceases. I should like to ask whether the sudden increase will conflict or interfere with the practical and effective working of a program of assimilation. I wish to ask further whether it is necessary in carrying out this program to adopt some such arbitrary method of restriction of immigration as has been so much discussed in recent years, and whether the "literacy test" restriction of the bill now before Congress is adequate? Certainly it is but fair to state that many close students of the question have come to feel that, in order to carry forward this program of assimilation in which we are all so much interested, we may have to resort to some regulation of the immigrant stream; in any case, however, we must press on at once with the work already begun, taking advantage of this present slackening to perfect these constructive methods of dealing with this big problem.

MISS FRANCIS A. KELLOR, Managing Director, Legislative Committee, North American Civic League for Immigrants:

In reply to the question I should say that the two policies ought to be kept absolutely distinct. The question of the admission or the restriction of immigration is a negative policy. The question of the domestic policy is a positive policy. The one is politic and the other constructive. The type of man that is interested in dealing with the question of the administration of the present immigration service and the exclusion or admission of aliens is a different type of man from that interested in advancing educational facilities and assimilation. The two come together at this point: If we find, as the result of our assimilation policy, that we are getting more people than we can assimilate, then the two groups of people have to come together. However, everyone will admit that the difficulty with the statistics at the present time is that we are not able to prove such a surplus to the satisfaction of any fair-minded man. We have many statistics. We say that the immigrants have displaced the American laborers and do not take their part in American life, and so on. The only way to settle these questions will be to bring such a body of facts together that they will be decided in an incontrovertible manner; but we should not proceed from some theory or some vagary of the people because of their dissatisfaction or otherwise.

A practical program, as I see every side of this question, is that the immigration problem ought to have an Immigration Bureau at

Washington. We ought to find out of what the immigration problem consists. We do not know at present. Cleveland has an ideal Immigration Bureau. We are now working for the development of a policy for the Pacific coast, getting the three coast states there to have state agents for immigration and get together in formulating a policy of distribution for the immigrants coming in, especially through the Panama Canal. We are going to try to avoid in the Pacific states the difficulties that have happened in the Atlantic states.

Society is very different in different cities. The different chambers of commerce, trade organizations and different organizations ought to have a body of people who are really taking up the immigration problem. We do not know anything about it. We are filled with theories as to what it is. When that is said and done, we do not have the facts to work out a really sound remedy.

The gentleman who spoke after Mr. Wheaton, told you the trouble about labor camps. What I want to bring home to you is this: What is it that makes the industrial unrest in America today? The thing that makes it, is the sense of injustice in the minds of the men; the fact that they are not being fairly treated; that they are not getting a just reward. The reason that the I. W. W. have been able to progress with their destructive program in the last year or two, has been due to the fact that they work almost entirely on the immigrant communities. With few exceptions it is the immigrant to whom they appeal. This has been possible because in the mind of that immigrant and in his experience lies the greatest amount of injustice and sense of bad treatment. I just want to give you in five or ten minutes some illustrations and I should like to have you, while I am talking, put to yourselves the questions, please, and ask what is to be your action.

There is nothing more dangerous to our community today than the man who goes around with a grievance. If we can find out that grievance and by adjustment get it out, it will do more for assimilation and right understanding than anything else, and it seems to me it is largely up to business to get these causes of grievance out of the minds of the working men. Take, for instance, the practice of payment. It is the custom of a large number of industries, particularly of steel industries, and surely of one in your State, to pay their men by check once every two weeks. Now what happened up in Lackawanna. In that community, almost entirely foreigners, there was absolutely no way of cashing those checks except at the saloon, and when the checks were cashed the saloon would take the odd cents; that is, if the amount of the check was $22.40 the man would only get $22.00. Now that went on for a long time and was one of the causes of unrest in that community. Down underneath there was a very

bad feeling against the company. It has been entirely eliminated by that company paying in cash—a little more work for the company on pay day, but the social gain has been tremendous.

Take the question of the padrone. The concensus of opinion of the labor organizations is that the padrone must be eliminated. There is no half-way measure with the padrone. He does not belong to the American system as the go-between between the employer and the employee and he must be eliminated. We cannot regulate him. He must be put off the industrial map by the employer. For instance, the system among railroads is this: The men who come here are usually peasants who have lived in one place all their lives. When they go into the labor camps under the padrone system that has been established, there is deducted by the company each week, we shall say, three dollars for supplies. If those supplies are so bad they cannot use them—which is the case many times—and they buy their supplies outside, they must pay the three dollars whether they get the supplies or not. That is the agreement of the company with the padrone. They charge one dollar a month for salt. It makes no difference whether they use it or not. The result of that is, plus the very bad housing conditions, discontent and unrest, that those men in the course of a year simply drift from camp to camp and the steady worker becomes the casual laborer and cannot hold his job. Now if the railroads figured out what they lost by this re-employment, for each time they employ a gang they have to pay a certain charge per head to the padrone who furnishes them,—they would find that it was a considerable item and that it would pay them to have steady workers receiving better treatment. That is a loss they have not considered and yet a very important loss; and not only that, but there is the cost of men who become casual laborers and floaters and trespassers and who when they came here, were steady workers. Take the situation at the stations. We say one of the fundamental things in America is that the immigrants have no regard for property. How can we expect him to have regard for property in America when the first thing he learns when he lands at the battery is that his property is stolen. Now that man comes into America with the feeling that he has been unjustly treated and his things taken and he has no way of recovering them and therefore considers that he also can take the property of others.

Take the question of laws existing in some states that the alien cannot work on public works. We all know that nine-tenths of the work on public works is that done by aliens. What does it mean to him. He knows that every day he comes there to work he is violating the law. He is told this. Sometimes they resort to the subterfuge of getting his first papers in order to cover the law. Isn't it better that we should have on the statute book a kind of law we can

endorse. If all public works must be built by alien labor, we ought not to have on our statute books, a law which makes a man break and evade that law in order to earn a livelihood. Now our statutes are full of discriminations of that kind. A man must get a license in New York City to run a push cart. What he does is to pay the political leader in his district five or ten dollars so as not to be arrested. What kind of a standard is that to set for the immigrants? Take the compensation laws that are passed or underwriters' regulations or insurance laws. They say that if an alien is killed or hurt in our states, his family which is non-resident, although he may be the sole support of that family, is not entitled to benefit under those laws. What does that set up in the mind and heart of the man who is working? What is the feeling in his mind when he sees or knows that when an American is killed or injured, his family is taken care of. He is doing the same kind of work and his family does not come under the workmen's compensation laws. The same thing with our mother's pension laws. In Illinois the alien's widow or wife is not entitled to benefit and the American is. Those things are causes of unrest in the mind of the immigrant. He does not understand the discrimination.

I just want to make one point in connection with education, as to its peculiar value. As a result of one of the investigations in New York we found that almost forty per cent of the accidents were due, in some of the different factories, to the fact that the injured man could not understand or speak English. For instance, if the order was given to avoid danger, it was almost always given in English through an English foreman, which meant that the immigrant, not understanding what was being said, did not respond to it. Such data as these, which are accurate, will go a long way to endorse, to show, the practical end of teaching the language if only to save the cost of payments for accidents. If we could get that kind of information to show the value of education and assimilation I believe we would go a long way towards attaining what we want.

I leave these things with you to show you why it is not the immigrant so much that is responsible for the things that happen as it is the conditions which surround him on arrival in America and the conditions to which he has to adjust himself.

CHAIRMAN POST: In addition to the observations of Miss Kellor about the discrimination with reference to the employment of aliens and its leading to subterfuge and suggesting possible crime, I think it might add to the information here if I said that within the past few months, the Department of Labor, which has within itself the Bureau of Naturalization, has brought about the prosecution of a number of men in one of our largest cities under these circumstances:

Aliens were not allowed to work upon the streets; they had to be citizens; had to be naturalized. Some of the aliens there found out that "padroni" could get naturalization papers for a consideration, so they were in the habit of paying twenty-five dollars. They did not know they were violating the law, but supposing it was some fantastic custom of the country, paid twenty-five dollars for naturalization papers which were void. I merely cite this as an additional fact supporting Miss Kellor's contention.

The time has now arrived for opening the second number of this session, that on the subject of "Child Labor Legislation."

CHILD LABOR LEGISLATION.

PAUL N. FURMAN, Secretary of the Pennsylvania Child Labor Association, Philadelphia, Pa.:

The primary interest of the Pennsylvania Child Labor Association is not so much to prevent children from working, as to see that those who do work, work under proper conditions and have a full realization of their equal rights with other children. The question is not one of politics but it is one of humanity and economics. In this State, as no doubt most of you know, we have a peculiar exemption in the Child Labor Law which permits boys of fourteen and fifteen to be worked all night in what are called the continuous industries. Now the two industries which have taken the greatest advantage of this are the messenger service and the glass works. At the glass works, boys of fourteen and fifteen work until approximately three or four o'clock in the morning. Government reports on this subject show the conditions under which they work and the condition in which they are turned out into the streets at that hour.

In the messenger service we have a condition which is unspeakable. I do not think there is anyone who will defend the employment of boys all night in the messenger service. Investigations have been made by the Pennsylvania Child Labor Association which revealed a condition that is really unspeakable. As an instance we found that in Pittsburgh boys of fourteen and fifteen go to school through the day, and then they work from either three or four o'clock in the afternoon until ten, eleven and twelve o'clock at night as messenger boys. The stories told by these boys show that they are familiar with life in its very vilest forms. They are sent into all sorts of dens and vile places where no man should go, and which should not exist. They know the inmates of these places. They know them by name. They know of their habits. They know every vile thing they do there; and they take that knowledge back the next day to school, to your child and mine, and I am sure there is nobody willing to defend any such

practice as that. Therefore we are going to ask at the coming session of the legislature that we have a law which prohibits the employment of boys at night in the messenger service, as well as in all other industries.

The street trades in this State are practically unregulated. I believe there is a ruling of the courts that when a boy buys a bunch of papers and puts them under his arm, he at once becomes a merchant. Under that rather fantastic interpretation, a boy of any age at all, it does not matter if he be only five or six, can spend the day or night on the street—he cannot spend the whole day because he is subject to the compulsory education law—but he can spend the night on the street selling his papers. This happens in the large cities, especially on Saturday night, and only yesterday Mr. Lightner who is in charge of the Philadelphia office of the Department of Labor and Industry, told me of a very interesting experience he had with one of these boys. He approached the boy and asked him what he was doing on the street at that hour and he said selling papers. The boy evidently knew of his rights and he said, "Who are you? I must know who you are before I talk with you." Mr. Lightner informed him of his office, and then the boy proceeded to say "I am a merchant; I buy these papers. I pay for them and I have the right to sell them. There is no law, day or night, to stop me," and, unfortunately, Mr. Lightner was compelled to admit that that was the true situation.

Now we feel that these boys of tender age should not be permitted on the streets at all hours; that there should be a limit to the time at night when they may be out; that there should be a limit to the age of the boys who sell newspapers. Kentucky has taken the most advanced step in this form of legislation and has set the age for newsboys at fourteen. That is a step which we hope sincerely that Pennsylvania will follow. It is the age at which boys are permitted to enter other industries under the existing laws and it seems only fair that that should be the age under which they should not be permitted to sell newspapers.

Just how far reaching that will be in its effect upon the newspaper industry we do not know. Mr. McClean, the publisher of the Evening Bulletin, in Philadelphia, who makes a very serious effort to regulate the work of the newsboys, informs me that he has very close to thirty-five hundred boys selling newspapers in Philadelphia and that their ages average between ten and twelve years; there are some older, but the majority of them are boys of ten and twelve years. He says that if the age is made fourteen, that they have their plans all worked out not to permit any boys to sell the Bulletin. That may or may not be the case but I doubt if it will work any serious hardship on any great portion of the community.

Dr. Jackson, in opening the Conference yesterday, said that he felt that there should be a re-adjustment of the hours. We feel so. Surely the employers of Pennsylvania are no less humane, no less intelligent than the employers of the other great manufacturing states of the North. We have in New York, New Jersey, Massachusetts, Ohio, Illinois, Indiana, and so on through twenty-one states, and the District of Columbia, an eight hour day for these children. The argument that it is impossible to adjust conditions in factories does not hold good, because they have been adjusted in these other states. The boys and the girls work eight hours and the adults are usually worked longer, nine or ten, as the case may be.

To properly safeguard the children who work and to see that they obtain the real educational advantages to which they are entitled, we think, in common with everyone who is interested in this topic, that there should be a new employment certificate clause. Under the existing law a boy or girl may obtain an employment certificate upon passing a very meagre examination, and once in possession of that certificate, it is practically a license to loaf unless the child happens to be caught up repeatedly by the compulsory school attendance officer. We feel that the certificate should be issued after a child has obtained a job. We think that the certificate should remain in the possession of the employer and if the boy or girl quits work, that the certificate should be returned to the issuing officer. There is no disagreement on this and I feel sure that this will be a successful feature of the legislation affecting the working child. The other requirements for obtaining a certificate should call for higher standards. The educational test ought at least to include the equivalent of the fifth grade in the public schools. We say the fifth grade because teachers calculate that by the time a child has reached that grade he has acquired a sufficient ability to read and to write. He can understand writing and have sufficient interest in reading to know its value in self-education. The hope is that he will possibly go ahead. Spurred on by ambition to take advantage of all the great world that is awaiting him in the works of literature. Prior to this grade, the child has not, apparently, in the opinion of the teachers, a clear appreciation of the value of reading. In fact we do not know anything about the boy's or girl's point of view of these questions.

We feel also that there is no real reason against and no opposition to there being a rigid physical examination of children about to enter industry. A child in Pennsylvania is in the care of the State for educational purposes until that child is sixteen. The law permits him to be loaned to industry after fourteen, under certain conditions. The present law has, as one of those conditions, a physical examination of the child. That has been to all intents and purposes a dead letter feature of the law. In co-operation with Dr. Jackson,

who assigned Dr. W. H. Blakeslee, a medical inspector of the Department, in Philadelphia, and after consultation with Henry J. Gideon, the Chief of the Bureau of Compulsory Education in Philadelphia, and with Dr. Walter S. Cornell, who is in charge of the physical welfare of school children and Dr. Oliver P. Cornman, an Associate Superintendent of Schools; the Pennsylvania Child Labor Association undertook last summer to examine all the children applying for employment certificates. We started the work on the 17th of June and continued it until the 31st of August. In that time we examined 3,954 children. We found that 427 of them were suffering in some way from some physical disability which disqualified them temporarily for a certificate; 17 of them—a comparatively small number, but nevertheless a number which should be safeguarded—were refused certificates absolutely because they were sufferers either from heart disease or kidney disease or serious lung affection.

We have called the condition to the attention of the Board of Education of Philadelphia and steps are now under way, with the cooperation of Dr. Price, Chief Medical Inspector of the Department of Labor and Industry, and with the Board of Education in Philadelphia, to have a thorough physical examination made of every child applying for a certificate. There is no need, apparently, for any new legislation on this subject. All we need to do is to enforce the law. The Board of Education has the matter under consideration. It has been referred to a committee and by that committee in turn to the Department of Superintendents and in traveling its course of red tape undoubtedly it will come back to the Board and there will be unquestionably some provision made in Philadelphia. In Pittsburgh, the officers of the Board of Education, who have this matter under consideration, promised me that they will be guided by whatever action is taken in Philadelphia. Scranton will probably join in the movement. The whole proposition will then undoubtedly come before the State Industrial Board. That Board will be asked to fix a set of physical standards for the children that will be adopted and will have the full force of law, so that we shall have, probably in the next three or four months, a complete physical examination of every child in Pennsylvania applying for an employment certificate.

One of the most important allied features of Child Labor Legislation is that of education and the continuation or vocational schools. We feel that fully fifty per cent of the children who enter industry at the age of fourteen or soon thereafter, do so because of thorough and absolute dissatisfaction with the school system. They cannot see that the school is preparing them for industry. If those children can be taken and put into continuation schools, with a good system throughout the State, such as Dr. Jackson, I believe, has in mind and such as the State Department of Public Instruction has in

mind, there is no reason why these boys and girls who leave school at fourteen or fifteen years of age, generally becoming shifters and idlers, should not become much more useful and intelligent citizens and have a full appreciation of all their duties. There is some question as to the number of hours a day that should be devoted to education and as to whether they should be actually considered a portion of the time spent at work. I think the Child Labor Association officers feel that any time spent in educational work, when that education is a part of the continuation school, either compulsory or voluntary, should not be counted as part of the time spent in employment. We should pass a law either permitting the employers to take these children and continue their education voluntarily from the time they are fourteen or sixteen to eighteen, or compelling the establishing such schools. We feel that employers must take on the added burden of continuing the education which has been broken at the very point at which the child is about to enter an educational period which will be the most advantageous of all the time spent in school.

There are many other phases of the Child Labor question, but I shall outline, in a brief way, the specific points which we have in mind for legislation at the coming session of the Pennsylvania Legislature. We shall ask the Legislature, for instance, to give us a maximum week of forty-eight hours for children under sixteen in any occupation. We feel very keenly on the question of night work that no boy under sixteen should be allowed to work at night. Girls are protected under existing law. We shall ask for regulation of the street trades. We shall ask for proper physical examinations of children entering industry, and we shall ask that they be compelled to undergo a proper mental test.

If there is a question that anyone would like to ask me, I shall be glad to answer.

CHAIRMAN POST: We shall have to defer the questions and discussions. The next speaker is here and must leave at an early hour. I have the pleasure, ladies and gentlemen, of introducing to you as the next speaker on the topic of "Child Labor Legislation," Mrs. Sarah A. Conboy, International Organizer of the United Textile Workers' Union.

CHILD LABOR LEGISLATION.

MRS. SARAH A. CONBOY, International Organizer of the United Textile Workers' Union:

Mr. Chairman and Members of the Conference, I regret exceedingly that I came in a way, perhaps, unprepared because I came suddenly from the American Federation of Labor Convention in Philadelphia, but I do not need very much preparation on the question of Child Labor. My work in the American labor movement has brought me in very close touch with the women and children and my work among them has been productive of perhaps some good things coming to them.

I want to speak for a few moments of Pennsylvania, your own State. For two years I was located in the northeastern part of Pennsylvania, working among the silk workers. I found there a great number of children working in the mills. I found the conditions under which they were working in some cases appalling, in some cases very bad and in a few cases fairly good. Through our organization we were able, even before the beginning of this Department, to do a number of things in the mills for the women and children, which this Department has since required by law. For instance, we were able to put seats in the mills for the girls to sit on and to provide drinking water. We also looked out for proper sanitary arrangements—but I must not go into details because my time is so limited.

In Massachusetts, no child under sixteen can work more than eight hours per day, and fourteen years is the age limit to go to work. In comparing the different states, particularly in the northern states, the age is fourteen years. In the southern states—I have just come north from the State of Georgia—there are Child Labor Laws perhaps on the statute books, but I believe that the employers do not care whether they are there or not. Returning from the City of Atlanta just now, I have found there children at the early age of seven working in the mills. I take it that the previous speaker is a member of the Child Labor Association. While I was in Atlanta, I aided in every possible way, Mr. Herschel Jones, who represented that Association, in pushing through a Child Labor Law making the age fourteen years. There were thousands of children there working in the textile mills under the most awful conditions. I have no hesitation in saying this because I make it public property throughout the country, as the mills there are owned and controlled mostly by northern capital which builds its mills there because of the child labor. The State of Georgia employs very many children of seven,

eight and nine years of age. Some say the employers don't know the ages of the children. Well, perhaps they do not to the day, but any man knows when a child is about seven or is the legal age of twelve or fourteen. The conditions for child workers, I believe, are better in Massachusetts than in almost any other state. In fact, all the labor laws in Massachusetts pertaining to its women and children, are, to my mind, about as good, if not better than those of any other state in the Union.

I want to say a word for this Department of Labor. When I sent a letter about two years ago to Commissioner Jackson regarding the conditions in the northeastern part of Pennsylvania, and naming specific places where such conditions existed under which women and children were working, two days after the letter was sent, two representatives of this Department were there. I want to say that a great deal of good has been accomplished in northeastern Pennsylvania by this Department. This section of the State is not as good as it ought to be but it has vastly improved within the last year and a half. It was tremendously bad in some places. I know of factories where when the children would pick up silk and shake it, it would be full of worms where it had lain over night. The Department has abolished this condition. It has insisted that seats be put in all mills and that proper sanitary arrangements be put in the mills. I might mention specific mills where children had worked, who were under age. These conditions have been corrected by the Department. The Department has done good work and I am glad to have this opportunity to speak a word for it, for the good work it has done in the part of Pennsylvania that I know so well, namely, the northeastern part.

I hope that the Legislature will enact laws that will make an adequate education compulsory. I hope that the children will be able to get a better education, not alone in this State but in many other states. In the State of Georgia children do not go to school at all. They have absolutely no education at all. You can imagine what it would be for a child to work at the age of seven; how it would be impossible to have any education. I am looking forward with the Child Labor Association, for the time when the law of eight hours' labor for children under sixteen will be universal and when sixteen will be the age limit for children to go to work in the mills.

CHAIRMAN POST: We shall now resume the consideration of the Child Labor Legislation question and Mr. Furman will have the floor to answer questions.

MRS. SAMUEL SEMPLE, Member of Pennsylvania Industrial Board:

I should like to inquire what became of the children who received the medical examination and were not given employment certificates?

MR. FURMAN: The greater portion of those debarred temporarily, were debarred either for defective vision or bad teeth or something of that sort, and as soon as those conditions were remedied, the certificate was issued. As to the seventeen rejected permanently, the matter was reported to the social service department of the hospital nearest the home of the child, and the urgent necessity for his undergoing a long course of medical treatment was called to the attention of the parents.

MR. G. C. THAYER, Asistant General Manager, William Cramp & Sons, Philadelphia:

Mr. Chairman, I should like to ask the gentleman if he will outline more clearly his idea with regard to continuation schools for children that are sixteen or over.

MR. FURMAN: If you will permit me, I should like to ask Mr. James S. Hiatt, Secretary of the Board of Public Education, Philadelphia, to outline that matter. It is under his special jurisdiction and I think he is possibly the best authority on the subject in Pennsylvania. He can give you a more lucid explanation of it than I would be able to do.

MR. JAMES S. HIATT, Secretary, Board of Public Education, Philadelphia:

Mr. Chairman, I think that the problem of continuation schools is a matter that can be very readily entered into and very slowly solved. I know that Mr. Thayer himself has given a great deal of thought to the problem of continuation training for boys of sixteen and upwards. In Cincinnati and in Pittsfield, Mass., and in a very few other places, there have been co-operative service high schools and universities and definite shop training. In Philadelphia recently, particularly along the lines of salesmanship, exactly that type of work has been developed. That work consists of either half time week by week or half time month by month in the shop or in the store, and in the school. This method is based on the theory that the school has the right to give all the theory but very little practice; that it is up to the shop and to the store to give all the practice tending towards skill; that no skill should be developed in the

school but rather the theory on which the skill is based, and that the skill should be given in actual practice either in the factory or in the store. I think that in Philadelphia, particularly in the William Penn High School, of which you possibly know, the work is done most effectively, week by week, spending one week in the store and then the next week, alternately, in the school studying the theory and the practice of salesmanship. Exactly the same thing is done in Cincinnati, in machine work in the factory. Beyond these instances, very little progress has been made. But the possibility of turning all the theory over to the school and of turning all the development of skill over to the factory and store, seems to be the way out.

MR. THAYER: I should like to point out, however, in elaborating any scheme of that sort, the difficulty of laying out any program which can be embodied in legislation and consolidated in legislation, that will be applicable to all the different classes of employment in which boys are found. What is applicable to a store like Wanamaker's Store in Philadelphia or possibly some other branch of work, is not applicable to a machine shop or a shipyard, two industries with which I am familiar. We cannot have an apprentice in the machine shop and send him out into a school at four o'clock. He is working with a mechanic and when he stops, the mechanic stops. We cannot disarrange our shop work in that sort of way. It will result in the apprentice losing his job.

In the shipyard we employ a number of boys of fourteen years of age and over as rivet boys. There is not any schooling which could be given them that would have any bearing on their work. It requires no education at all. Most of those boys graduate into riveters and chippers and caulkers. The use of education to a boy of that sort from the point of view of his efficiency as a workman, is negligible. I feel that it surely will be of great advantage to him as a citizen but not as a workman, for it requires no education to run a rivet hammer. Now to take these boys and break up their work by sending them to school will be of no value to them as workmen at all. I instance these two cases as showing the difficulties in making rules and laws to apply to all the different trades alike.

MR. WILLIAM F. LONG, President, Pennsylvania Laundrymen's Association:

Mr. Chairman, at a Conference of persons interested in the laws affecting child labor in Pennsylvania, held at the instance of Commissioner Jackson during February of this year at Philadelphia, a representative of the laundry industry suggested that the provisions of any proposed law relating to Child Labor should cover females

employed as domestic servants, pointing out that the men engaged in the laundry business are in constant contact with this class of labor and know that there are thousands of girls employed in housework for a great many more hours per day than the law allows in industrial establishments. It was shown that all the laws that had hitherto been proposed, strangely enough, lacked any provision for the regulation of the hours of servant girls and that the only excuse offered by the proponents of such laws was that a provision covering domestic servants could not be enforced. In answer to this, our representative stated that he felt sure that the housewives of the State were sufficiently law-abiding to obey any law that might be passed, at least to an extent that would give relief to the majority of the girls employed in domestic service.

Upon a motion duly made and carried, the Conference put itself upon record as favoring the inclusion of servant girls in any Child Labor law that the Legislature might be asked to pass, and I should like to ask Mr. Furman whether or not these servant girls, of whom there are thousands in this Commonwealth, without any protection so far as labor laws are concerned, are going to be included, as per the decision of that Conference, in the bill which he expects to place before the coming session of the Legislature.

MR. FURMAN: I think this is a matter entirely for the woman's bill. I do not think it is a matter for Child Labor Legislation as there are very very few girls under sixteen in domestic service. At the time that Mr. Long brought in this question, my recollection is that Mrs. Bradford of the Light House, Philadelphia, gave some enlightening information upon the subject of domestics of today. As I recall it, Mrs. Bradford said that in a majority of the homes, (those of which she had any knowledge) the girls did not work more than eight or at the outside more than nine hours a day and that provision was made in nearly every home of which she had knowledge, to give these girls time in the afternoon so that their hours would not exceed the maximum of eight or nine in a day. This is may recollection of Mrs. Bradford's statement.

In answering Mr. Thayer further, I would say that the proposition of continuation schools as under consideration at the present time, includes on the average one hour a day per week in school; that the instruction is to be the same sort of instruction as has always been given in school. that is, academic instruction. If you take the ship building industry which he mentions, Cramps, and the New York Ship Building Company, which are the two largest near Philadelphia, they do a great deal of government work and all government work must be done on an eight hour day basis. They adjust themselves to that very readily, and I am sure that any child em-

ployed for eight hours could very readily spend the next hour in the continuation school, in the plant.

As to his statement that the boys will lost their jobs, that statement is always made when any new regulations of this kind are started. The children do lose their jobs but are hired back again and there is no depreciation in the number of children working. When the eight hour employment law was put in force in Massachusetts, where they had thirty thousand children employed on the first day of September, a census made out at the end of December showed twenty-eight thousand employed and a majority of the other two thousand were accounted for in the schools. When the law went into effect in New Jersey on the fourth day of last July, the children were all turned out of work. The condition there and the experience, I am informed, has been exactly the same as in Massachusetts. All the children turned out, were taken back, as the manufacturers and employers of the State needed them and found that they could not get along without them. There is no reason why employers should constantly make this threat of turning them out for they don't do it except temporarily to make an effect. I don't think the Pennsylvania manufacturers will do that. I have more confidence in employers of Pennsylvania than to think they will do that. I think that almost universally, and especially, large employers, will comply strictly and readily with the law if we are fortunate enough to have such a law passed.

CHAIRMAN POST: If there are no other remarks or questions, this section will stand adjourned.

At 12:25 o'clock P. M., the Section adjourned.

(Proceedings to be continued in August Bulletin.)

Vol. 2 No. 8

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

AUGUST, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below and also by: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Fehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Division.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

The Attorney of the Department is Richard W. Williamson, who is assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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REPORT ON THIRD ANNUAL MEETING OF AMERICAN ASSOCIATION OF PUBLIC EMPLOYMENT OFFICES, DETROIT, MICHIGAN.

Mrs. Samuel Semple, Member, Pennsylvania Industrial Board.

The third annual meeting of the American Association of Public Employment Offices was held in Detroit, Michigan, July 1st and 2nd. It was timed to overlap and succeed the Convention of Government Labor Officials; and in some points supplemented the work of that body. The meetings were not large, but were very practical, and the programme was chiefly devoted to the technical points of management of Public Employment Offices, or Labor Exchanges. The Association was courteously welcomed to Detroit by the Honorable O. B. Marx, Mayor of the City, and by Mr. J. R. Cunningham, Commissioner of Labor for the State of Michigan.

The report of the Secretary of the Association, Mr. W. M. Leiserson, of Madison, Wisconsin, gave a survey of the field in Public Employment Office work during the past year. Several states, among them Pennsylvania, have passed new laws, providing for such service; others, notably Illinois, have amended old laws on the subject to make them more effective. There are now ninety-nine state and city Public Employment Offices, located in thirty states, with federal offices in eighteen cities. Canada has extended the service through Ontario, Quebec, and Manitoba, with offices located in ten cities. In the United States the situation is satisfactory as to laws alone. Appropriations for the work are still everywhere inadequate; it is still further hampered by lack of a permanent force, trained, and operating under civil service; and no satisfactory system of uniform records has, as yet, been devised and adopted. The most marked progress of the year has been in the amount and character of legislation secured. In the extension of practical work, the State City Employment Bureau of Cleveland offers a fine example; and the opening of the New York State system of Public Employment Offices, with its practical co-operation with the New York City Municipal Employment Offices, has been one of the notable developments of the year. If the plan of the United States Commission on Industrial Relations for this work can be carried out, it will mean a national co-operation, with the establishment of branches of the

federal system and the enjoyment of its privileges where its standards are met by local conditions. The creation of the National Farm Labor Exchange was indicated as one of the progressive achievements of the year in the way of organizing the labor market of the country. In presenting this report, Mr. Leiserson took occasion to express the opinion that the next step necessary to a correct appraisement and direction of the service of Public Employment Offices is a definite distinction between temporary and permanent positions, this being rendered necessary by the constant turn-over in the labor market.

Mr. W. F. Hennessy, President of the Association, spoke not only in that capacity, but gave a most interesting account of the year's experience in extending and improving the work of the Cleveland State-City Employment Office, of which he is Superintendent. The Cleveland office was established first by the State, Ohio being the pioneer in the experiment of public employment offices. Its work was later supplemented by the municipality. Under this joint plan there are the three Bureaus: Employment, Immigration and Vocational Guidance. A great growth resulted this last year from the policy of centralizing the labor market of the city, working for efficiency in service by giving the job to the best man, maintaining an open administration, and giving the private agencies a vigorous competition. In his endeavor to accomplish the regulation of the private agencies in this way Mr. Hennessy confessed failure; he had been obliged to seek additional regulation for such agencies by law, and secured it after exposing frauds in statements and in fees. The business depression increased the difficulties of the problem presented to the Cleveland office during the last winter. A week's survey of unemployment showed business 20% to 30% below normal, and 61,000 out of work. The Employment Office helped to ameliorate this condition by a "give a job" campaign; by opening a workroom for women in connection with the women's department of the office; and by establishing a small loan fund to help over temporary difficulties. The winter's work demonstrated the need for a "handicap department," and the need for co-operation of all offices, and of the so-called "charities." Mr. Hennessy insisted throughout on the big view of the employment agency—that it must be efficient to be of real service, but that that service is to be estimated, not merely as a business convenience, but as an agency for human betterment.

Miss Muhlhauser, Director of the Women's and Girls' Bureau of the Cleveland office told of the vocational guidance exercised therein, somewhat after the plan of the German Juvenile Labor Ex-

changes. To the need for such work and its possibilities, America is just awakening. Ohio is the first state to authorize a vocational bureau in connection with a state-city employment office. While favored by social agencies, the city council at first distrusted what it considered a movement of "uplifters," and was slow to make financial provision. When the need to "give a job" was recognized, it was found that to "know a job" was also important. The development of this special work, for women and girls resulted. The advantages of locating this vocational work with the public employment office were indicated—the classification as charity is avoided, a convenience is offered to employers, and it tends to concentrate in one office the co-operation of the public schools. An additional advantage is that thereby it may be that the public will be awakened to the fact that cooking and commercial courses are practically the only vocational training offered to girls. Under Miss Muhlhauser the Cleveland office has investigated fraudulent advertising concerning work offered to girls, and has instituted a system of personal investigation of physical and moral probabilities of positions to which girls and young women are sent. A beginning has been made in such investigation concerning domestic service. It was stated that the biggest problem in the employment office for women is that of housework. It offers a loophole to escape from age restrictions, and is the most difficult service concerning which to secure a basis for judgment. The Cleveland office is endeavoring to introduce the German plan of a record book for those engaged in domestic service; and is also making an effort to standardize wages. Vacation work for girls is another special interest, and attention is given to direction of girls in telephone service, and in child nursing. The Cleveland office is maintained as an educational centre in certain lines. A comfortable waiting room is provided, and made interesting by charts, exhibits, books, magazines, and plants.

Mr. Charles B. Barnes, Director of the New York State Bureau of Employment, told of the progress of that work since its opening, January 4th, 1915. Mr. Barnes was engaged, previous to that time, in a careful investigation of public employment offices in the United States, under the direction of the Commission on Industrial Relations, and came to the practical work in New York State, with a clear conception of things to be achieved and to be avoided. He found himself hampered from the start by the lack of trained people from whom to select superintendents for local offices, and by very inadequate appropriations for salaries and rents. The New York system consists so far of offices in Buffalo, Rochester, Syracuse, Al-

bany, and Brooklyn, with an administrative office in New York City. One of the New York achievements is the training of office superintendents. For the sake of that training and of the opportunity for the study of industrial conditions, men and women of unusual ability have been willing to work in subordinate positions, with the result that New York is developing a service of practical experts. The system so far refers and places labor under a classification of twenty-one industries, subdivided into 120 occupations. It furnishes daily reports by occupations. The offices are kept in touch with the industries by personal visits by superintendents, and with each other by daily reports, and by frequent visits from the State Director. The two general misapprehensions which have been hardest to overcome are the feeling that the office is a charity organization for the "down and outs," and that it handles only unskilled or casual labor. Welcomed at first by the charity forces, the system was later severely criticized by them because they felt that their people were cruelly refused special care. The office has steadily maintained that its business was to assign a man to a job because he could fill it, not because he was out of work. For the reclamation department which it hopes to establish in the future, it believes that it is now laying the best foundation by helping individuals to proper placement, fitting the man to the job, thereby tending to reduce drifting. To revolutionize adult placement, and to serve youth entering industry by careful placement rather than by a theoretical vocational guidance, are among the things aimed at in New York. Mr. Barnes believes that this organized service helps to raise the standard of wages, and at the same time increases the efficiency of industry by supplying proper workers.

Miss Louise C. Odencrantz, Superintendent of the Women's Department of the Brooklyn employment office, discussed the Placing of Women by Public Employment Offices. With 170,000 women wage earners in Brooklyn, the bureau's few months of service have demonstrated certain things—chief of which is the need to distinguish between relief and employment, and the necessity of dividing applicants into two main groups, employable and non-employable. The Brooklyn office has not discouraged the latter class from coming, but it has provided for them by different means. Temporary workrooms operated in co-operation with other bodies have been a part of this provision. The handling of employables on a strictly business basis has helped to prevent floating and degeneration. While the bureau has tried to serve all women, including the highly trained and semi-professional workers, it has found its greatest field in domestic service, and the next greatest in industrial and mechanical pursuits. The service it has been able to render to older women by vocational

readjustment has been marked. Women too old to secure continued clerical employment have been helped to other work. A certain amount of success was reported also in the readjustment of domestic service to meet newer ideas and conditions. Miss Odencrantz expressed the opinion that a public employment bureau for women should endeavor to standardize wages for women, thereby performing some of the functions usually exercised by a trade union. She spoke also of the opportunity for co-operation with schools in proper handling of juvenile placements in labor. The so-called "business schools" tempt young people into certain lines, for selfish reasons, so that clerical and commercial work is over-crowded. Before the factories of today lies the possibility of counterbalancing this by the attraction of excellent conditions; and here the public employment office can help in a new type of vocational guidance.

Developing a Farm Hand Business for an Employment Office was the subject discussed by H. J. Beckerle, Superintendent of the Milwaukee Employment Agency. The business depression of last year brought about a conference between a citizens' committee of Milwaukee and the Wisconsin Industrial Commission, and a determination to "boost farm work." The Commission sent speakers to Farmers' Institutes to explain that while in the country there was a dearth of farm laborers, in the city there were men out of work, many of them originally trained as farmers. These representatives of the Commission suggested that the farmers take these men, and start them at beginners' wages. If they were foreigners, it was advised that those employed in one locality be of one nationality. The plan met with favor, and proved itself good. In some cases the farmers advanced transportation when the employee possessed baggage; and practically the only cases of dissatisfaction with the arrangement on either side were where poor food and bad general accommodations caused the workers to give up the job. The employment was generally by monthly agreement, wages running from $25 to $40 per month, with $20 for the inexperienced. This last class frequently went early in the year in order to learn. "Farm couples" came to be quite a feature of the work.

Mr. Charles McCaffree, former Commissioner of Labor of South Dakota, now President of the National Farm Labor Exchange, told of the service rendered by that organization this year in securing harvesters for the grain states, and of the possibility of organizing farm labor for the whole year. Experience points to the feasibility of co-operation between the State Labor Departments in the way of distribution, and the Industrial Commission, the United States Departments of Labor and Agriculture, and various civic organizations in other phases of the subject. Discussion of this comparatively new province of the public employment office brought out many interest-

ing sidelights on the subject—the exploitation of harvesters by camp followers, the custom of demanding a larger supply of labor than can possibly be used, the need of protecting communities from an influx of men who cannot be employed, the handling of "hobo" labor, etc. Wisconsin, in using her farmers' institutes as a medium of education concerning supplies of farm labor, and of the adaptability of the immigrant to farm pursuits, has opened the way to a needed industrial readjustment.

The Immigrant Worker and the Public Employment Office was the subject handled by Miss Erickson, of the Chicago Immigrant Protective League, who feels that in the organization of the labor market, foreign labor needs to be handled by a special department within the agency. Under the usual system, casual labor furnished by the immigrant is wastefully handled, largely because of a lack of knowledge of English on the part of the worker, and a lack of good interpreters on the part of the agency. These same reasons emphasize among immigrant laborers the oppression of split fees and short jobs. Interviews in a familiar language are needed to sift out skilled workers, direct the farm hands to the land, protect the immigrant girl in her settling here, and give guidance to the immigrant children starting in industrial life. Protection to American labor is an appreciable part of the good to be attained by this more intelligent handling of the immigrant labor supply.

Mr. Walter L. Sears, Superintendent of the New York City Municipal Employment Bureau, reported for the Association's Committee on a system of uniform records. The report was based upon an international investigation in which one hundred and twenty-five offices were asked for suggestions. The function and fundamental intention of the system should be expressed in the name, and the form, Public Employment Office, Bureau, or Exchange, was recommended. Service should be strictly impartial as between employer and employed. Civil service apointment should be the rule, regulated by examinations fitted to the business, and chiefly oral. Efficiency in service should be the justification of the system; and for the extension of such efficiency, records should be as nearly uniform, and as simple, as possible. Already eight or nine states and many cities have practically identical registration cards. The records should include provision for tracing, the results of referring applicants to a job, and should provide for some knowledge of the industrial history of an applicant. Considerable discussion arose as to the wisdom of questioning applicants as to religious and trade union affiliations. The former question is raised most frequently in farm and domestic service; while union connections are of varying interest in

different localities. Ohio, for instance, has but few closed shops. Further work on the development of uniform records, and on the preparation of a model employment agency law was assigned for the coming year, and it was the sense of the meeting as expressed in the resolutions that a system of official co-operation with private non-fee employment agencies should be desired.

Throughout the meetings Mr. Louis Post, of the Federal Department of Labor, stood for national co-operation in all the phases of work under discussion; and at the same time maintained that the work that the federal government has begun in this line, must be judged, not from the local or sectional, but from the national viewpoint. Mr. Post was frank in his acknowledgement of information gained from the meetings concerning local conduct of employment agencies, and equally frank in stating that in approaching the general subject of industry in the country, his Department is bound by its very origin and name to put the emphasis of consideration on the needs of labor, the persons employed. On this basis he advocated the justice of requiring employers, as well as employees, to furnish references.

During the closing session Mr. Charles B. Barnes, of New York, was elected President of the Association for the ensuing year; and it was agreed that the next annual meeting should be held in Buffalo, New York, at the time of the Convention of Government Labor Officials.

Incidentally during the meeting, mention was made of the excellence of the law passed by the last Legislature of Pennsylvania, which will give to this State a system of Public Employment Offices under the Department of Labor and Industry. There are already two municipal employment offices in Pennsylvania, in Pittsburgh and in Scranton. These were the outcome of last year's business depression, and of the growing public recognition that, since man must live by labor, he has a right to know where that labor may be secured. These two offices give the basis for the system of State-city co-operation that the Pennsylvania Law contemplates. There are also throughout the State, a number of private non-fee agencies that may in time be incorporated in the State system, as is being arranged in New York City by the municipal system. It is interesting also that through the work of Mr. Sears of New York, an interstate system of labor exchanges is being developed in which both the Pittsburgh and Scranton offices have agreed to co-operate.

The first and most emphatic impression of the Detroit meeting is that a public employment office has now attained the dignity of a public service enterprise, and must in no wise be confounded with "charity." It is not the first time in history that work under-

taken for the specially needy has been found to be so good and of such universal benefit that it has become a public necessity. The only trouble is that once again the specially needy are dropped to the rear, and the "reclamation" and "handicap" departments are ambitious for future realization. The other trouble is the evident tendency to measure efficiency by service to the employer rather than to the employed. "Filling orders" for labor was a far more frequent phrase than "getting a job" for a man.

The next strongest impression left was that the public employment office is an instrument for vocational guidance that should not be neglected. It may in that way help to reduce the number of industrial misfits among adults; and, more important still, working with the public schools, it may help young people to an intelligent choice when they enter the ranks of labor.

Again, such an office can be properly and profitably used in the industrial and civic education of the immigrant, and in locating him for his own and the country's best advantage. The recognition of this is one of the marks of the aroused public conscience concerning the stranger within our gates.

Farm work and domestic service, backward in the method of handling themselves because they are unorganized branches of labor, seem to have found in the public employment office, an unexpected friend. Especially for the women in these and other unorganized industries, the public employment office finds itself in the position to do much to standardize wages, hours, and working conditions. It need scarcely be pointed out that this will be greatly to the economic advantage of the women. It is worth while to note also that in the conduct of such offices there is open a new and semi-professional field to women where their work will be in the direct line of social service. In both the meetings of the Employment Office Association and of the Convention of Government Labor Officials that overlapped it, the work of the women, in character and in the ability with which it was presented, was noteworthy.

Finally, the work of public employment offices, if properly conducted, will bring into existence a body of practical experts on industrial conditions in this country that should go far toward making possible the economic readjustment whose need is making itself more and more felt.

THE EXPERIENCE OF HART, SCHAFFNER & MARX WITH COLLECTIVE BARGAINING.*

During the past four years, this Company has concerned itself very deeply in developing its relations with its employees. Labor disturbances brought keenly to our attention the necessity of having the good will of the workers in order that we might maintain and preserve the good will of our customers and insure the stability of our business.

We are glad to give an outline of our experience, believing it has yielded results in the form of certain principles of policy and action, which may be helpful in the promotion of industrial peace.

In making this statement we are particularly concerned that the formal and external features of our plan shall not be confused with the real and vital substance of the arrangements, to the neglect of the spirit and of the principles which are in reality responsible for whatever progress we have made.

After an opportunity of several years to study causes and effects, we are convinced that the prime source of difficulty was a lack of contact and understanding between our people and ourselves. The failure to adjust petty grievances and abuses became the cause of irritation entirely disproportionate to their importance when taken singly, but which in accumulation became the main ground for complaint.

There was no special complaint against the hours of work, which were fifty-four per week, and which have since been reduced to fifty-two. The physical working conditions were good and in fact very far advanced compared with the general conditions in the industry. There was a general demand for higher wages, but we have always looked upon this as an accompanying demand rather than a first cause of difficulty.

A settlement was reached by an agreement to arbitrate, one arbitrator to be named by each side and the two to choose a third. It was not possible to agree upon the third member and the efforts to arbitrate were started with only the two partisian men on the board. This proved to be a good thing. For the time being it forced us to settle matters by agreement and compromise rather than by arbitrary decision, and this method has become a distinctive feature of the whole system. A third arbitrator was eventually chosen, and he is a man peculiarly capable of aiding in creating sympathetic understanding on the part of all.

*Furnished by E. D. Howard, Manager, Labor Department, Hart, Schaffner & Marx, Chicago, Ill.

Favorable results did not appear at once, but were the natural and legitimate effects of various devices introduced to meet difficult situations as they arose, and of certain principles of fair dealing, into harmony with which we have attempted to bring our business policies.

In addition, the Company created a labor department. A university professor, trained in economics, was engaged to study the situation and draft a plan for promoting better relations with our employees. At the beginning the task appeared stupendous, as grievances were highly magnified and exaggerated by frequent reiteration of the more radical leaders for the purpose of keeping the war spirit at a high temperature.

This new department, headed by Professor Earl Dean Howard of Northwestern University, gradually assumed certain functions in which the workers had a direct interest and administered them with the main purpose always in view. The chief duties of the labor department now are: the maintenance of a system for the prompt discovery and investigation of any abuses or complaints existing anywhere among the employees; the recommendation of measures designed to eliminate the source of the complaint; protecting the company's interests in the Board of Arbitration and the Trade Board (a court of first instance established to adjust complaints and interpret the agreements); negotiating with the business agents of the unions and satisfying their demands as far as possible; administering all discipline for all the factories (all executives have been relieved of this function); general oversight of all hiring; the maintenance of hospital and rest rooms; the administration of a charity fund for unfortunate employees, of a loan fund, and of the Workman's Compensation Act; responsibility for the observance of the State and municipal laws regarding child labor, health and safety, also for the strict observance of all agreements with the unions or decisions of the two Boards; education of the foremen and people in courtesy, patience, mutual helpfulness and other peace-producing qualities; suggesting devices for the amelioration of hardships incidental to the industry and for the higher efficiency of operating.

Industrial peace will never come so long as either employer or employee believe that they are deprived of rights honestly belonging to them. Our experience has taught that the business man in authority is a trustee of various interests, including his own, and if he administers his business so as to conserve and harmonize these interests to the best of his ability, he is most likely building an enduring success.

A labor department, critical of everything touching the interests of the workers, a Trade Board and a Board of Arbitration constantly reviewing and discussing policies and methods, protect us against

ourselves and make it impossible to violate or overlook the rights of the employees. These agencies undoubtedly create limitations which at times seem vexatious, but we have found that, in the long run, legitimate progress has been helped rather than hindered thereby. Innumerable cases have arisen where we have been obliged to change plans and policies much against our will yet where the final rsults were better because of the change.

Arbitration and conciliation should be applied to all departments of a business wherever there is a conflict of interest. If nothing, more, it insures exhaustive discussion of every matter of importance, gives everybody an opportunity to express his opinions, frequently brings to light valuable suggestions, and makes possible a higher degree of co-operation and team-work. It is a method to be employed continuously to secure harmony and satisfaction. Patience and self control are essential in administering a business on this basis. It is human nature to resent interference and to desire unrestricted liberty of action, but these conditions are not necessary and are often inimical to true success. Few men can use unlimited power wisely and no wise man will dispense with checks which tend to keep him in the right path; certainly, he will approve of checks calculated to restrain his agents from arbitrary and unjust acts toward fellow-employees.

The application of these ideas to the labor problem, especially as a help to the employer in deciding what attitude to take toward trade unionism, has produced favorable results with us. If the employer voluntarily limits his own authority and agrees to conduct his business according to the rule of reason and even-handed justice as interpreted by an outside authority, such as an arbitration board, he must insist that the organized employees submit to the same limitation, otherwise his sacrifice will be futile and his submission to injustice cowardly.

Unions should be recognized and favored in the same proportion as they manifest a genuine desire to govern themselves efficiently. All agreements should be so drawn as to release the employer from his obligations whenever the unions fail to observe theirs. Arbitration boards, officials in charge of labor matters, and union leaders should direct their operations and make their decisions with the one purpose always in mind, namely, to make it profitable and easy for all parties to acquiesce in the rule of reason and justice, and dangerous and difficult for them to attempt to get unjust advantage.

We did not realize and we believe the majority of employers do not yet realize the extent to which the attitude and conduct of their organized employees reflect their own policies and conduct. Strict adherence to justice, especially if interpreted to the people by a

board in whom they have confidence, will gradually educate them and their leaders to see the advantage of this method. It is fortunate for the employer if his own employees have an autonomous organization, influenced as little as possible by outsiders.

In our own business, employing thousands of persons, some of them newly-arrived immigrants, some of them in opposition to the wage system, hostile to employers as a class, we have observed astonishing changes in their attitude during three years under the influence of our labor arrangements. They seem to understand that they can rely upon promises made to them by the company; that all disputes will be finally adjusted according to just principles interpreted by wise arbitrators.

Disciplinary methods are a prolific source of dispute with employees and it is difficult to avoid offending their sense of justice, especially if they are not fully informed of all the facts in the case and hear only one side. Moreover, petty officials are not likely to show good judgment in administering disciplinary power or to have correct theories about it; very frequently they are tempted to satisfy private dislikes under pretense of disciplining. We regard it as an essential element in maintaining industrial peace to centralize the administration of discipline in one official having no interest except to maintain the efficiency of the shops without disturbing the harmony and good will of the people.

Our theory of discipline is that it should be as mild as possible consistent with effectiveness in securing the desired results. Complaint memoranda are given as warnings by the foreman; if these are disregarded, suspension slips are next given which remove the offenders from the pay-roll until reinstated by the discipline officer. An investigation is made and, as a rule, the suspended person is restored to his position on probation. This method is continued until it becomes apparent that the employee is either hopelessly incompetent or insubordinate, whereupon a temporary lay-off or discharge may follow. Our Trade Board, composed of workmen and foremen, presided over by a neutral, outside chairman, will give a hearing to the case if requested, and may order a reinstatement or modification of the penalty. Appeal from this tribunal may be taken to the Board of Arbitration for final adjudication. In spite of its apparent complexity, the administration of discipline has become very satisfactory to both side and very few cases even come before the Trade Board, and for many months none have been appealed.

Much depends upon the leaders of the workers. We have had some experience with misinformed, and self-seeking men who secured temporary influence over the people, but somehow they failed to thrive

in the atmosphere of our arrangement. Some of these same men have been delivered of their worse qualities as they have learned the advantage of better methods of dealing. The system seems to work out a selection of the fittest candidates and trains them to become efficient leaders and executives, skilled in negotiation, in pleading and cross-examination before the judicial boards, in organizing, disciplining and leading the people. One of the leaders in particular developed a wonderful influence over all who came in contact with him on account of his high ideals, his patience under trying circumstances, and his indomitable faith in the ultimate success of right method.

At the beginning of our experiment we believed that the labor union was a competitor for the goodwill of the people and that both could not have this goodwill at the same time; we feared that the union would get the credit for anything granted to the people, thus nullifying the good effect to the company of any concessions or benefits given to them. Concessions wrung from the reluctant employer by the union through a Board of Arbitration, especially if the withholding of the concession seems contrary to the sense of justice of the workers, of course gain no goodwill for the company.

Without some kind of organization among the people, there are no responsible and authorized representatives with whom to deal and the real interests of the people as they see them themselves are likely to be overlooked or disregarded. The chosen representatives are made to feel the dignity and honor of their positions so long as they deal fairly and reasonably; those who adopt a different policy invariably fail and retire with considerable loss of respect and prestige. Those whose motives are good and who can reason intelligently grow in the esteem of their fellows through their success in negotiation and arbitration. They appreciate the consideration shown them by the company and the arbitrators and reciprocate by proclaiming the fairness of the company.

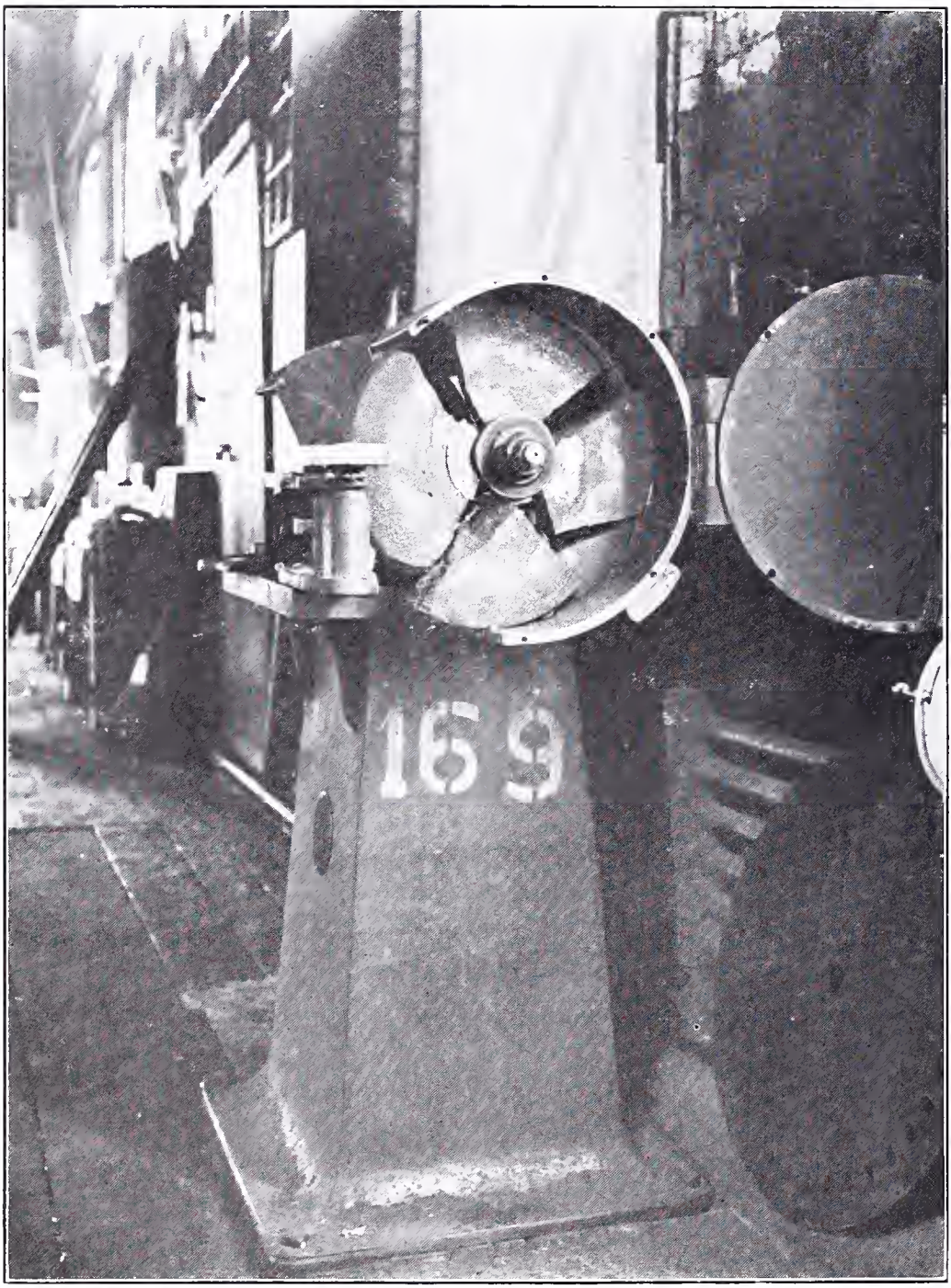
One of the most important functions of our labor department is welfare work,—giving advice and material assistance to unfortunate employees, improving the working conditions in the shops, maintaining rest rooms and libraries, etc.—but this is not done for the purpose of more easily depriving the workers of their right to be represented in all matters to which their interests are involved. Working men are quick to resent the substitution of favors for justice. Welfare work, however, in connection with general fair dealing is very effective in securing goodwill, especially if it increases the personal contact between the officials of the company and the employees.

Not the least of the advantages we have derived from our system is the reaction of the ideas and ideals, first applied in the labor department, upon the other departments and particularly upon the executive staff of the manufacturing department. Inefficient methods as to prevailing conditions on the part of higher executives; these could not long survive when every complaint brought by a workman was thoroughly investigated and the root-cause of the trouble brought to light.

The unexpected and indirect results of our labor policy in increasing the efficiency, reforming the conduct, and raising the intelligence of the executives coming into contact with the system have been as profitable and satisfactory as the direct result,—i. e., the creation of harmony and goodwill on the part of the people toward the company.

A summary of the essentials of the system which has produced such gratifying results in our institution would include: a labor department, responsible for industrial peace and good will of the employees, thereby of necessity fully informed as to their sentiments, their organizations, and really representing their interests in the councils of the company; a means for the prompt and final settlement of all disputes; a conviction in the minds of the employees that the employer is fair and that all their interests are safeguarded; constant instruction of the leaders and people in the principles of business equity, thus gradually evolving a code accepted by all parties in interest, servicable as a basis for adjustment of all difficulties; the development of efficient representation of the employees,—honest, painstaking, dignified, reasonable, eager to co-operate in maintaining peace, influential with their people and truly representative of their real interests; a friendly policy toward the union so long as it is conducted in harmony with the ethical principles employed in the business and an uncompromising opposition to all attempts to coerce or impose upon the rights of any group or to gain an unfair advantage; and a management that guarantees every man full compensation for his efficiency and prevents anyone receiving anything he has not earned.

Briefly expressed, it is simply the natural and healthy relation which usually exists between the small employer and his half dozen workmen, artificially restored, as far as possible in a large-scale business where the real employer is a considerable group of executives managing thousands of workers according to certain established principles and policies.



Broken emery wheel in plant of Lorain Steel Company, Johnstown.

EFFICIENT GUARDS.

It is sometimes difficult for employees to realize the danger of moving machinery and after guards have been installed for their protection, they have been known in some instances to remove them owing to the fact that they claim they were in their way and hindered efficient work. Naturally a little patience is always needed in the operation of all the new machines and this is also the case with the use of guards.

It is, no doubt, at first awkward to use machines thus equipped but a little patience and perseverance will soon overcome this and in the end finished work will be able to be turned out just as quickly and efficiently.

It is sometimes difficult to obtain practical examples wherein safety devices have prevented serious, if not fatal, accidents and so the Department is very fortunate in being able to reproduce this month the accompanying photograph, showing the effective way in which a bursting emery wheel was prevented from doing serious injury to the workmen employed in that vicinity. This photograph was sent to the Department by Mr. D. C. Thomas, Manager of the Employment and Accident Department of the Lorain Steel Company of Johnstown, Pa. The details concerning this accident are reproduced intact from Mr. Thomas's letter which accompanied the photograph:

"The emery wheel stand shown is of the double wheel type, and at the time this wheel burst there was a man grinding at each wheel, and another man awaiting his turn. The wheel was of 15-inch diameter, 2-inch face, and was traveling at the rate of 1,400 revolutions per minute, and, as you will note from the photograph, it burst into five separate pieces.

"This emery wheel stand is located in our machine shop, and at the time the wheel burst there was a loud report, but beyond a bad scare, no person was injured, and we feel satisfied that if any of the men in this department were sceptical as to the value of guards on emery wheels, they are now truly converted."

The Department would be very glad to receive photographs and descriptions of any other instances of a like nature or of accidents the telling of which might prove helpful in preventing similar ones in the future.

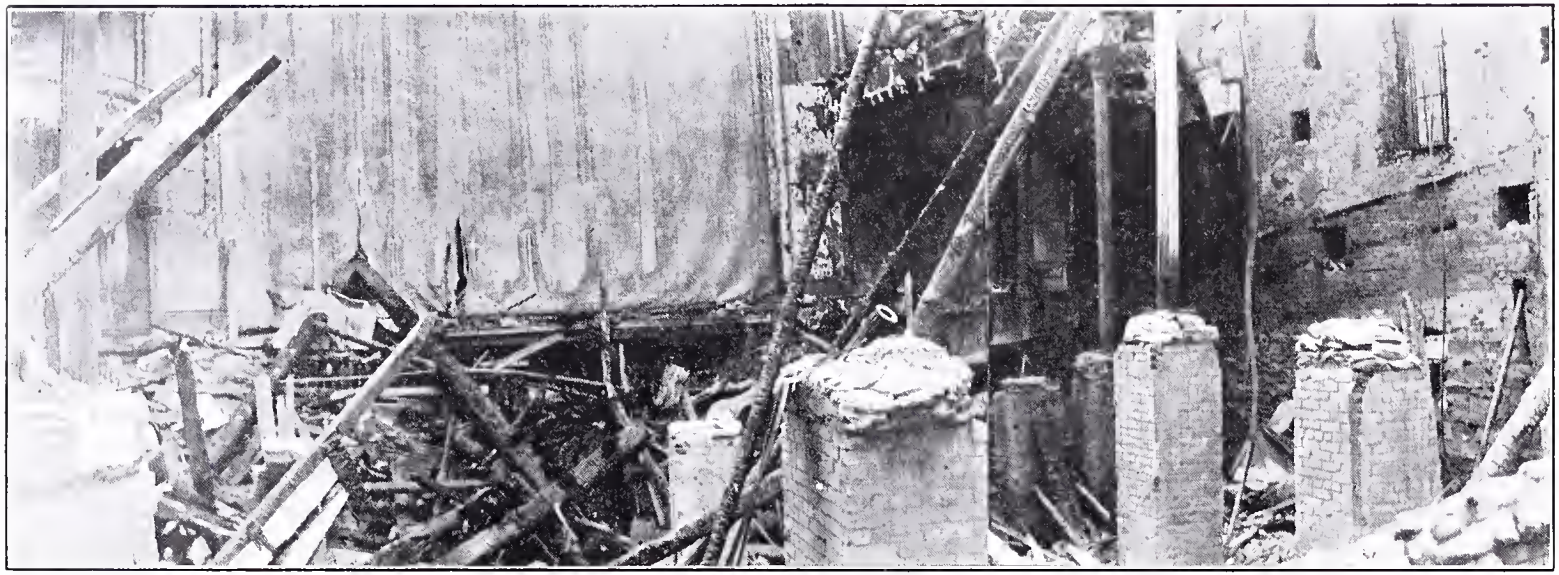
THE VALUE OF ASBESTOS CURTAINS.

The accompanying cut is a reproduction of a photograph which well illustrates the advantage of fireproof curtains in theatres. The picture was taken after a fire in the opera house at Williamsport, which fortunately occurred late at night when the theatre was empty. The holes shown in the curtain were cut by the firemen to enable them better to control the blaze and are in no way due to the fire itself.

While the illustration shows a condition opposite to the one usually found in theatre fires, it nevertheless demonstrates fully the usefulness of an asbestos curtain. In this instance it was the stage that was protected from the flames in the auditorium. These conditions are more frequently reversed as theatre fires occurring during performances are more apt to originate on the stage.

It is in just such cases that loss of life has been so great and so absolutely needless. The sight of a small blaze on the stage throws the audience into confusion and even though the asbestos curtain is dropped at once, the resulting panic is often followed by the injury or death of many people. Inasmuch as the law requires drop curtains to be of non-combustible material, the audience is absolutely safe as long as the fire is confined to the stage, which it will be if the curtain is promptly lowered. Just a little care to remember this fact will enable any audience under such circumstances to pass out of the building in a perfectly safe and orderly manner and without the pushing and jostling which have resulted in so many great disasters.

The failure of the cap stones on the different piers is also worthy of notice.



Interior View after Fire at Williamsport Opera House.
(See Article, The Value of Asbestos Curtains.)

ACCIDENTS REPORTED TO THE DEPARTMENT DURING JULY, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.	
Nursery,	....	1	.....	.....	.....	.....	.....	.....	.....	1	....	....	.....	1
Eng. Lab.,	....	....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	.....	.....
Bldg. Trad.,	1	7	5	6	8	7	6	2	3	35	....	....	.....	40
Chemicals,	1	7	8	9	9	22	3	5	7	47	....	....	.....	59
Clay glass,	7	15	13	21	23	18	9	4	4	98	....	....	.....	106
Clothing,	....	....	.....	2	2	1	2	.....	1	5	....	....	1	7
Food Pro.,	2	3	5	5	8	5	1	1	2	26	....	....	.....	29
Leather,	....	2	2	6	3	4	2	.....	.....	19	....	....	.....	19
Liquors,	1	2	1	1	4	3	.....	1	1	10	....	....	.....	12
Lumber,	1	4	8	6	5	5	4	1	4	27	....	1	.....	33
Paper,	5	4	2	3	5	9	2	.....	2	28	....	....	.....	30
Printing,	....	2	1	1	1	1	.....	.....	.....	6	....	....	.....	6
Textiles,	1	9	9	9	7	5	4	.....	4	39	....	1	.....	44
Miscellaneous,	....	7	2	6	4	3	1	3	1	18	....	....	1	23
Laundry,	....	....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	.....	.....
Metals	82	319	364	371	347	305	240	14	127	1,887	....	....	.....	2,028
Mines,	26	197	205	212	203	187	170	45	148	1,007	....	....	.....	1,200
Public Ser.,	59	229	257	244	240	243	160	3	125	1,304	....	....	.....	1,432
Tobacco,	...	1	1	2	.....	.....	.....	.....	.....	4	....	....	.....	4
Unclassified,	....	2	1	1	2	3	1	.....	.....	10	....	....	.....	16
Total,	186	811	884	905	871	821	605	79	429	4,571	....	2	2	5,083

SAFETY FOR THE CHILDREN.

The Department of Labor and Industry is endeavoring in every way possible to enforce the various laws intended for the protection of the children in the industries of the State. These laws prohibit the employment of children under fourteen years of age in any kind of work, and also prohibit their employment in dangerous occupations or in the operation of certain kinds of machinery, under the age of eighteen years.

It is believed that in establishments where these laws are properly observed, the children are working with a reasonable degree of safety. There is, however, one industrial hazard to children which the law does not remove. This hazard lies in the practice frequently followed, particularly in smaller establishments, of allowing young children to carry lunch to their parents in the workrooms. Children as young as nine and ten years of age have been observed by the inspectors of this Department, carrying lunches through workrooms filled with running machinery. Even though this machinery was guarded in full compliance with the law and was in a satisfactorily safe condition, a very serious injury might occur on account of a misstep or as the result of childish inquisitiveness and irresponsibility.

This danger is one which the Department of Labor and Industry cannot handle by legal action but seeks to remove by the co-operation of the employers of the State. It, therefore, suggests that all employers forbid these children from entering the workshops, and that they provide a safe place in an entrance room or corridor where each package can be left, properly labeled with the person's name for whom it is intended. This would almost entirely remove the risk of such accidents to small children.

TRAVELING SAFETY EXHIBIT.

The Traveling Safety Exhibit of the Department has been shown very extensively during the past six months throughout the eastern part of the State. Acknowledgement is hereby made of the kindness of the following firms in donating window space for a period of at least one week, during which time the exhibit was on display in the cities wherein they are located:

Traveling Safety Exhibit in Store Window of Jonas Long's Sons, Scranton.
Material arranged by Mr. Brown, Head Decorator.

Dives, Pomeroy & Stewart, Harrisburg, Feb. 19th to March 3rd.
Charles H. Bear & Co., York, March 22nd to 31st.
Steinman Hardware Company, Lancaster, April 1st to 7th.
W. M. Mast & Son, Coatesville, April 8th to 15th.
Swartz Department Store, Chester, April 19th to 26th.
Yost Department Store, Norristown, April 29th to May 6th.
Dives, Pomeroy & Stewart, Pottstown, May 7th to 14th.
E. H. Kresge Department Store, South Bethlehem, May 17th to 24th.
Bush & Bull, Bethlehem, May 24th to 28th.
Motion Picture Exhibitors' League, Rajah Temple, Reading, June 7, 8 and 9.
A. H. Heilman & Co., Williamsport, June 11th to 18th.
Reeser, Kessler & Wieland Co., Sayre, June 22nd to 29th.
Jonas Long's Sons, Wilkes-Barre, June 30th to July 7th.
Pittston Dry Goods Company, Pittston, July 8th to July 15th.
Jonas Long's Sons, Scranton, July 16th to July 23rd.

The management of the stores in the windows of which the exhibit was shown stated, without exception, that it had drawn many thousands of people to their windows and that a great majority of these, particularly the men, were very much interested.

It is hoped that this means of promoting publicity to the safety movement will have some permanent benefits. During the fall months the exhibit will be shown in some of the various county fairs where it was impossible to go the last year.

Special thanks should be given to the window decorators of these various stores, who contributed their services in making an effective arrangement of the display. The accompanying photograph illustrates the pleasing manner in which the display was arranged at the time the exhibit was in the window of Jonas Long's Sons, Scranton, Pa. Mr. Brown, Head Decorator, devoted considerable care and attention to the arrangement of the exhibit which is brought out remarkably well by the photograph.

SIDEWALK ELEVATORS OF DEPARTMENT STORES.

One of the dangers in department stores which is frequently overlooked and which has recently been receiving special attention by the inspectors of the Department of Labor and Industry, is sidewalk elevators.

One of the more frequent types of this class of elevators consists of a platform raised and lowered by means of cables from a windlass, located in the basement of the store. Attached to the

windlass are the usual right-angled handles which must be laboriously turned to raise the elevator to the sidewalk. It has often been noticed that these handles are simply attached loosely to the driving gear and if through some mishap this handle should work loose and come off and the winding drum be freed owing to the fact that no dog had been provided to hold it in check, the platform would descend without being under control.

To keep these handles in position during the hoisting operation, a cotter-pin or some other suitable contrivance should be attached to the shaft which would prevent the handle working off during the process of winding up the cable. It could readily be removed, however, at the proper time.

It has also been noticed in several instances that a suitable dog has not been provided to hold the gear wheels rigid whenever it is necessary to stop for a rest or during the times when it is desired to keep the platform at the sidewalk level. In some cases a piece of wood was found to be inserted between the gear teeth and this was the only means employed to prevent the elevator from descending.

It is the custom to remove the handle when it is desired to lower the elevator and by means of a brake slowly permit the platform to descend. In some cases, instead of a suitable mechanical friction brake, a piece of wood was jammed against the revolving wheel and this was used as a brake. Such a method was naturally very unsafe and it was considered dangerous not only to the person who was attempting to operate the brake but also to any persons in the vicinity.

From these facts, it is recommended that those in charge of establishments using this type of hand sidewalk elevator should see that an arrangement is provided for attaching the handles securely and that a proper dog and friction brake is attached to the gear wheels. The condition of the cables should frequently be examined as these elevators are exposed, to a greater or less extent, to the elements, and frequent inspection is necessary to insure their being in a safe condition.

Elevator windlasses are often surrounded by all kinds of packing or storage material. In one store, particularly, wooden boxes were stored so close to the windlass that there was great difficulty in attaching the handle when it was desired to raise the elevator to the sidewalk level. The person who was turning the handle had to stand directly in front of the revolving handle and if it should have come off of the shaft or slipped out of his hand—there was no dog to engage the gear wheel and prevent it from unwinding—he would

have been seriously hurt, as there was no chance of getting out of the way. Sufficient space should always be provided around a windlass of this type so that the person turning it can stand a little to the side, then the danger of being struck, if something should slip, would be very slight.

This type of elevator, of necessity, is used by the shipping and receiving departments of stores, in which departments there are usually a large number of boys working. Frequently, unauthorized, these boys attempt to operate the elevators. Attention is called to this fact, that more rigid disciplinary methods should be taken whenever it is found that boys under the age of eighteen years are attempting to operate these machines. One case which came to the notice of an inspector of the Department was that a boy, fifteen years of age, who was employed in the delivery service. He had been repeatedly warned by the manager not to operate this elevator. But at a time when no person was about, he disobeyed instructions and was seriously injured in an accident which resulted in his death.

The importance of this subject is, therefore, easily understood. It is suggested that not only in verbal orders but in printed or written notices to be posted around the vicinity of these elevators, it should be stated that employees under eighteen years of age are not permitted to operate these machines.

PROCEEDINGS OF SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY.—WEDNESDAY MORNING, NOVEMBER 19, 1914.

(Continued from July, 1915, Bulletin.)

SAFETY SECTION.

Wednesday, November 18th, 1914, 9.00 A. M.

The Safety Section of the Pennsylvania Industrial Welfare and Efficiency Conference met in the Hall of the House of Representatives, at 9 o'clock A. M., November 18th, 1914. The meeting was called to order by Mr. H. W. Forster, of the Independence Inspection Bureau of Philadelphia.

MR. H. W. FORSTER:

Mr. W. P. Eales, Supervising Inspector of the Travelers' Insurance Company, will address us upon the subject of "Machine Tools and Power Transmission Machinery."

MACHINE TOOLS AND POWER TRANSMISSION MACHINERY.

W. P. Eales, Supervising Inspector of Travelers' Insurance Co.

By invitation I have prepared a brief, practical paper on Power Transmission and Machine Tools for this particular section of the Conference assembled here to discuss "Safety." The necessity for Standard Safeguards is recognized by those whose duty it is to inspect shops and factories to see that conditions are safe, and by those who are required to bear the expense of providing safeguards. The guards that provide maximum protection are undoubtedly of the greatest benefit. In designing standard guards, the best features of those now in use should be retained and anything further incorporated that may seem wise, reasonable, economic and efficient.

The Industrial Board of the Department of Labor and Industry is endeavoring to learn what is best and most practical in this respect. To this end it asks manufacturers, workmen and safety engineers to submit the results of their experience with safe-guards, and their knowledge of accident-prevention work, for the purpose of incorporating in standard designs, those features that have proven most valuable in actual practice.

In order to facilitate the work and to avoid duplication, the principal kinds of manufacturing plants were classified according to their product, or the machines and methods used. It seemed logical, however, before considering special machines or operations, to give attention to power-transmission equipment. When we speak of power transmission in a plant, we refer to shafting, belts, pulleys, gears, etc., from the engine or motor up to, but not including, the machine tool. Electrical transmission is not considered under this classification, as this is more properly defined as distribution, and as such was handled separately, by another committee. The plants in which machines were driven by direct connected, independent motors were regarded as ideal, and did not need to be considered by this sub-committee on power transmission.

The tentative code, drafted by the sub-committee, was printed in Bulletin No. 1, June, 1914, issued by the Department. Some features were taken from existing codes in other states, some from existing rules and regulations in shops and factories in Pennsylania, and other items were suggested by members of the committee. There is nothing in the code that is not in accordance with sound, every-day practice, and every item has been adopted, in part at least, by some manufacturing concerns in this State.

Possibly the code is not a finished product in its present form. It was based largely on memory, and may need some additions and corrections. It may also appear to some of you at first, that too much attention is given to detail. Standardization is necessary, because many protective devices and safeguards have been provided that represent a considerable expenditure, but are of little value because of the lack of any standards to follow in their construction. To condemn these guards, unless entirely worthless, would be a hardship to the owner.

Speaking for myself, it is my belief that existing safeguards, railings, etc., already installed by the manufacturer, should be acceptable, if adequate and efficient, although not in strict accordance with the standard. Some latitude has been allowed by the committee in the matter of standard railings, as it was deemed advisable to leave certain details optional, wtih respect to material and construction, in order to cause as little inconvenience or expense as possible.

I believe that some further modification would be proper so that flat bar iron expanded metal and other similar materials of ample strength would be accepted. I know of plants where many of the guards that have been installed, are made from the materials manufactured in those particular shops. On all new construction, however or where no protection is provided on existing installations it is essential that the standard specifications be carefully adhered to.

One of the most important features of power transmission is to provide means in each room, section, or department, to stop immediately all the machinery in that particular portion of the plant. This is good engineering practice, because it saves power, facilitates repairs, and reduces the hazards in repairing and shifting belts. This method of control is often imperative, where the power is generated by steam and gas engines, and its adoption materially influences the safety in the power room, and elsewhere about the plant; it also tends to prevent a minor accident from becoming a serious one. The instant stoppage of machinery may be accomplished in a number of ways. A cut-out switch on a group-drive motor, or a clutch with a disengaging lever will serve the purpose in some cases; in others it may be more practicable to provide an electrical connection to an emergency throttle on the engine, or a tightener pulley arranged to release instantly; sometimes a direct connection to a quick-closing throttle on the engine, such as is used in rolling mills, proves quite satisfactory. Whatever system is installed, it is imperative that all of the emergency-stop stations be conveniently located and plainly marked; frequent and regular tests of the stopping devices are equally essential. The prompt stoppage of a plant in an emergency is hastened by allowing the full load to remain on all machines.

Any system of signalling to the engine attendant is not to be considered as constituting an emergency stop. This man may be temporarily away from the throttle, or he may be the very person who is caught in the machinery, which is not infrequently the case. In either event, the damage would be done before the engine could be stopped.

I believe the specifications for set collars are very good; but as set-screws are used for fastening these collars, it would have been advisable to include the prohibition of all protruding set-screws on revolving or reciprocating transmission equipment. I make mention of this now, because under "Pulleys" Paragraph "A," it is implied that protruding set-screws are permissible in pulley-hubs if inside the rims of the pulleys. Flush set-screws can be used here as well as elsewhere. I recall a fatal accident that occurred this summer, which was caused by a protruding set-screw in a pulley-hub, although the set-screw was well within the rim of the pulley. I am opposed to the use of projecting set-screws, even when guarded.

I believe that, as a general rule, vertical shafts should be encased to a height of not less than 7 feet from floor or platform; yet in a flour mill and in a pottery, recently inspected by our men, it was found that a standard railing was more practical although it occupied more floor space. Either of these methods should be optional, as it is with horizontal shafts.

I have no comment and no criticism to offer with regard to the recommendation concerning couplings of various types, as it appears in the bulletin.

Concerning the recommendations for pulleys, it has been interpreted by some to mean that a web or disk fastened to the pulley, flush with the rim on the side nearest the bearing, will answer. A web of this kind would not decrease the hazard very materially, and it would, therefore, be advisable to specify a stationary guard in order to make the matter clear and definite. To regulate the space between pulleys and nearest bearing will be extremely difficult in many cases, on existing installations. It is entirely practical, however, on new construction.

It has been demonstrated too often, that gears wherever located, and regardless of the direction of rotation, cause serious accidents; they are dangerous and should always be encased. Toothed gears, whether spur, miter, or bevel, cause a lateral thrust, and must necessarily be supported in the best possible manner. For this reason, bearings are invariably placed as close to the gears as possible, and this increases the hazard. A gear guard that does not cover

the point of mesh is inadequate for safety; and the same may be said of a strip or ribbon guard that does not cover the entire periphery, as the gear teeth will form a shear with the guard, and still cause accidents.

Cast guards, while preferable for machine tools, are seldom practical on power transmission, and for this reason wrought sheet metal or screen guards are recommended. Sheet metal, if used, should never be less than No. 8 gauge, and this thickness should be increased wherever it seems necessary. Guards constructed of wood, if properly fitted and made permanent and substantial, should be acceptable.

I believe the necessity for guards beneath overhead belts more than 7 feet from floor or platform is influenced by the size and speed of the belt in question, as well as the height of the pulley and the distance between them. Some guards already installed are inadequate to withstand the shock or blow that would be delivered by a broken belt, and, to my mind, such guards have not improved matters, but have increased the hazard. Unless these guards are very substantial, fitted close to the belts and well up and around the pulleys, I believe that it is better to omit them altogether.

There are many belts that are not directly over aisles or passageways, nor adjacent to them nor above the heads of workmen while at their regular place of employment, and such belts should be excepted from this requirement.

Belts with cemented joints are the most desirable, and next in favor are those laced with rawhide, especially when used for change belts on cone pulleys. A considerable number of accidents are reported that have resulted in cut hands due to changing belts laced or joined by wire or metal clips, cleats, rivets or toggles.

A tight and loose pulley equipment is not complete unless provided with a mechanical belt shifter, consisting of a device that is permanently held in fixed ways or guides. Belt shifters should be arranged to be locked in position, so that the belt cannot creep from the idler on to the fixed pulley.

In the absence of self-oiling bearings on old installations, it is advantageous to provide wick feeds, or oil pipes extended beyond the danger zone. Where atmospheric conditions necessitate the use of stiff grease instead of fluid oil, the grease pipes can easily be extended also, or spring compression cups provided; the last-mentioned devices are essential on certain types of engines and motive power equipment, and it would be no hardship to require them wherever the work of oiling is dangerous. The installation of gravity oiling systems or mechanical forced feed oiling devices is worthy of consideration in every heavy-duty plant; these will save money, avoid repairs and replacements, and prevent accidents.

As a rule, transmission shafting is given very little attention or examination until some failure or trouble occurs. All shafting, pulleys, belts and bearings should be inspected at frequent and regular intervals. Time and money will be saved by this procedure.

All guards and devices, when once installed, should be maintained in good order and kept in position, and an explanation should be required whenever a guard is found removed. I should favor imposing some kind of punishment for a flagrant offense of this nature.

Providing adequate illumination, both natural and artificial, is one of the best safety precautions that can be taken.

Many accidents happen just at starting-up time, and to prevent these an alarm should be given, so that all can be in a safe place when the machinery is started. In a considerable number of plants, a gong, whistle, or a signal of some other kind is used; this is a very good idea, and the practice should be made general.

Machinery should be wiped and cleaned only while it is at rest; and if necessary, a sufficient period of time should be set aside for this purpose each day or week. This is an established custom in many plants, and should be made general.

The carelessness of the employee or employer, when an accident occurs, is generally emphasized too strongly, and the indifference or negligence of the executives is given too little attention.

Another subject taken under early advisement by the Industrial Board, was Machine Tools, comprising lathes, planers, millers, drill presses, boring mills, and all other mechanical devices ordinarily used in machine shops for the working of metals.

Machine shops are not generally regarded as being hazardous, as compared with rolling mills, yet our experience is often directly opposite to this. A good machine shop is a better proposition to insure than a rolling mill, but unless it is a good machine shop, there is very little choice between the two. In a machine shop, the amount of material handled in the process of manufacture, per man, is not important; the work comes under the finishing category, and requires skilled labor. Machine-tool operation is not essentially dangerous, the point of operation is usually quite safe, and nearly all machine tools are fed automatically. The character of the work in machine shops has changed considerably during recent years, the proportion of machine work having increased, and that of fitting-up, bench, and file work, having decreased. Skilled hand work at the bench has given way to accurate and precise tool work, and the machine tool hazard and the consequent accidents have increased

in the same ratio. Fully fifty per cent (50%) of the accidents in machine shops are attributed to the lack of safeguards; yet the opposition to guards by the entire force is more pronounced in these shops than in other industrial plants.

To prevent accidents in this particular line of industry, attention should be given to guarding all hazardous features on existing equipment, and new tools should be guarded in an approved manner by the manufacturer before they are shipped. Progressive manufacturers are aware of the necessity for guarding their machines, and most of these now made are well protected. Back gears on lathes, drill presses, milling machines and other similar tools should be completely guarded, even though these gears are used very infrequently.

Cast-iron, back-gear guards should be given preference, and the guards should be complete, they should be secured in a permanent and substantial manner to the head block, frame, or housing. For change and feed gears, sheet metal enclosures are the most convenient, but many cast-iron enclosures have also been provided. All doors and covers should be self-closing.

The matter of eye protection in machine shops has not heretofore been given merited attention, therefore it is gratifying to note that the Board has taken this feature under consideration.

There are a few instances in which the point of operation on machine tools as well as the material being machined should be guarded. I refer to certain cold saws, milling cutter heads, radial planers and bar stock material, and it is well to provide hoods, bonnets, guards, tubes and troughs wherever there be any exposure or menace.

Machine tools should not be wiped while in motion. I believe that disregard of this rule is the cause of many so-called minor injuries.

The CHAIRMAN:

The next subject on the program is "Woodworking Machinery," and Mr. Richard H. Gunagan, of the Fidelity and Casualty Company of New York, is the speaker.

WOODWORKING MACHINERY.

Richard H. Gunagan, Fidelity and Casualty Company, New York City.

A few years ago the suggestion that certain woodworking machines be guarded, would have received some degree of ridicule. The question would have been asked "How could you guard woodworking machines?" the contention being "It could not be done."

Happily these conditions have changed and most thinking men interested in woodworking machinery are now anxious to install safeguards wherever possible.

Those of us who have witnessed the results of a workman's hands coming in contact with a circular saw or shaper, will surely never forget the sight of the injured man being brought up to the shop, supported on either side by his mates, to receive treatment for those mutilated witnesses to another man's neglect.

It is no credit to those interested in enforcing the use of safeguards on woodworking machinery, to allow those that control woodworking plants to overlook their great responsibility.

Many of us may perhaps feel that we are well qualified to pass on safety conditions for woodworking machine tools, if we are familiar with metal working machine tools. This is no more than natural, when one realizes what a vast amount of detailed knowledge is required in the machine shop or foundry. But in reality the high speeds at which woodworking machines operate, the exposed knives and cutters and the softness of the material entirely change the conditions.

Analyzing the operation of tools used in the woodworking industries, we find three principles; first, that the stock moves towards the tool and the tool remains fixed, as in wood turning; second, that the tool moves and the stock remains fixed as in wood boring; third, a combination where both the tool and the stock move, as in the circular saw, planer or surfacer. The feed varies from hand to semi-automatic and in some cases, to completely automatic.

In the consideration of woodworking machinery, account should be taken of: power and its transmission; arrangement of tools; buildings; handling of material, and many other items.

The method adopted in the Monthly Bulletin of the Department of Labor and Indutry, is one of the best I know therefore I have taken the liberty of simply amplifying under each of the various heads, the items which pertain to woodworking machinery.

This Bulletin permits one interested in a particular subject but with a limited amount of time, to find the subject in a single book. Furthermore, he obtains information as to what has been found to be the best practice and approved by the Department of Labor and Industry.

These Bulletins supplied to the workmen in the various industries are of great benefit. Officials in charge and also the workmen have far greater respect for "Safety" literature, when issued by the State in Bulletin form or by the various companies, than they have for isolated articles on this subject that are often received as a sort of joke.

Turning to Bulletin No. 1, we find under Guards: "All moving parts of woodworking machinery such as gears, feed rolls, cutting heads, pulleys, belts, etc., shall be guarded in an approved manner."

A guard should be reasonable in price, light in weight, mechanically strong, permanent in adjustment, self-adjustable to the work and to the machine tool, when operated at various angles; should not interfere with the operators, should permit of visual inspection, increase and not decrease the output, but above all, should not be a menace in itself.

Expanded metal or cold drawn mesh serves in conjunction with angle iron, as a frame; it is a most excellent material for those making their own guards, not only in the woodworking shop, but for other classes of manufacture. Makers of guards are now prepared to furnish these for nearly all classes of machines. Guards should not be removed from machines at the pleasure of the workmen, and when on the machine, their proper setting should be observed.

Belts should be guarded, especially where they come up through floors, or where long boards may come in contact with them.

Horizontal belts or over-head belts should be not less than seven feet from the floor. Belts on machines should be sufficiently guarded to prevent contact with the operator or his clothing.

Belts should be endless or laced, and if metal fastenings are used, they should be used only on such belts where the operator's hands cannot possibly come in contact with them.

Best results can be obtained by having one man skilled in this work, to take care of all belts.

Hangers should be carefully selected for size and work intended, sufficient in strength, properly spaced and secured, if possible by beam clamps, or if on wooden stringers or brick wall, securely bolted with through bolts.

Bearing boxes should be adjustable, self-lining, self-adjusting, and self-oiling.

Shafting should be of sufficient diameter to prevent undue vibration.

Horizontal shafts, less than six feet from floor or platform level, should be incased or protected by railing or guard.

Vertical shafts should be incased or protected to a heighth of six feet from floor or platform. Dead ends of shafts, exceeding two inches in length, should be incased or guarded.

Dead ends of shafts can easily be protected or covered by a wire guard secured to bearing box.

Collars should be cylindrical and the screws used to fasten the same to shaft, should not project beyond the largest diameter of the collar, or should be of the safety set-screw type.

Split collars should be so designed that when secured in place, exposed heads of bolts and nuts will not project beyond rim.

Couplings should be of the safety sleeve type, or if flanged, the heads of bolts and nuts should be countersunk.

Countershafts, should, as a rule, be supplied to all machines, the starting level of belt shifter to be within convenient reach of the operator, so that the machine may be started and stopped instantly.

Bearings should not be allowed to become worn; tight and loose pulleys should be so placed as to prevent jamming of belt with hangers or supports.

Countershafts should be so placed with respect to the machine that the belts will not interfere with the proper working of the operator.

Belt shifters should be permanent. Belt shifters should be positive in their action, so as not to permit belt to creep from loose to tight pulley.

Means should be provided in each room, division, section, or department, to stop immediately all power transmission machinery therein, from such emergency stations as may be necessary; such stations to be properly marked. Each machine should also have independent starting and stopping device, no matter how driven.

All gears should be completely guarded where exposed, and if it is necessary, the gears on the under side should be completely guarded.

Chains and sprockets should be guarded or encased.

Transmission machinery: all gears, friction clutches, pulleys, and belts should be guarded, according to standards, and where transmission machinery is placed underneath floors, or in basements, care should be taken to provide ample head room, so that the oiler will not have to crawl underneath moving parts.

Oiling of main line, jack- and countershafts should be done when machinery is at rest. Under no circumstances should the oiler attempt to oil machine tools while they are running or should he interfere with the operator. If shafting or countershaft require attention while running, safety ladders should be provided.

Service platforms for the oiler afford protection and facilitate the work. The oiling should be done by one man.

Attention should be given to his clothing and the proper oil cans supplied.

Lumber should be piled carefully and inspected before going through machines, for nails, bolts, screws, loose nuts, etc.

Finished lumber should be removed as soon as run through the machines. If lumber is to be piled in yard, proper foundation should be prepared.

Rubber mats should be placed near to certain types of machines to prevent slipping, but if mats are allowed to become clogged with sawdust and shavings, or if they project above the floor, they may become a menace.

Woodworking tools should not be crowded, but ample space should be provided for each, taking in consideration the length of the lumber, before going through, and after being finished.

It is desirable that tools run lengthwise of the shop, thereby passing all lumber in the same direction.

Windows should be large and kept clean. If artificial light is necessary, good illumination can be obtained by the large size Tungsten incandescent lamps. If gas is used, all open jets should be covered with wire guards. Good light saves money and promotes safety.

Besides the general illumination, it may be necessary to install individual lamps near certain machines, in order to prevent eye-strain and enable the operator better to perform his work.

Exhaust systems should be installed in woodworking shops. The advantages are many; such as the removing of chips and shavings and knots that may become loose, which if permitted to escape in the open space, would produce injury; keeping of the floor clean to prevent slipping; the removal of the dust, for the purpose of sanitation and to prevent it from cutting off the light from the windows, or the lamps; but most important, to act as a guard, not only on the upper side of the woodworking machine tool, but on the lower side as well.

Where hard, fireproof, or poisonous woods are worked, the management should be compelled to install exhaust systems.

Motor drive, whether in small groups or on the individual machine, is superior to the method of main and jack shaft. The advantages are control, elimination of shafting, pulleys and belts, using power only when in operation, not necessitating the shutting down of the plant, due to failure of one machine, and the convenience of starting up in an emergency such as night work.

The foreman in charge of a woodworking plant, due to his familiarity with the various tools, is very apt to forget that he himself once needed instructions. It is common for a workman when applying for a position, to be asked, if he can run a planer, jointer, or circular saw, and to answer, "Yes." He is then hired and in order to test his knowledge, he is placed at work without instruction. In some shops, even his shop-mates are not permitted to show him, in order that the boss may "test him out." If successful, he is advanced from one tool to another—finally, the accident.

It is the foreman's duty either to instruct the man himself, or to assign to this work, some competent mechanic, who can instruct new men, apprentices, and if necessary, journeymen. The old excuse, "It was the workman's fault," will not be accepted, either by the superintendent or by the management, much less by a jury.

One of our largest companies in the United States, controlling a great many plants, requires the foreman to report in writing, every accident. This report in turn goes to the superintendent for his information and action, this in turn is sent to the home office, where the safety expert considers the whole matter, and passes upon it. If necessary, the report is next referred to one of the executive officers. If this procedure is taken by a company of this character, there is certainly no valid excuse why the management in small plants cannot give proper attention to its operators on dangerous machines, and hold to account those in direct charge.

The lathe is used for turning the rough stock. All exposed gears should be guarded revolving faceplates, well secured; and thread on spindle of head stock should be opposite to the direction of rotation. Tail stock should be so constructed and fitted, as to lock securely where set. Screen should be so placed as to prevent chips from striking other workmen.

The lathe might not be classed as a dangerous tool, nevertheless, due to high speed, the work is liable to be thrown out or the turning chisel caught, due to the rest being below centre or work breaking away from faceplate. It should be operated with care, and no one should be entrusted to run lathes, especially apprentices, until fully instructed.

The circular saw in its simple form, consists of a frame, generally cast in one piece, the top divided into two sections, one side movable, with an arbor yoke for housing spindle on which saw is mounted. Sometimes there are two saws mounted on separate spindles, when it is known as a double circular saw, and in certain machines, a number of saws are placed on one spindle and are known as a "Dado" machine.

There are a number of excellent guards on the market that allow a perfect freedom in the operation of the saw, permitting all adjustments, such as raising and lowering the saw, allowing the saw table to be tilted, caring for various thicknesses of material, and allowing the operator to see his line. The guard might have an addition, a "kick back," which acts as a "preventor" for sticks or loose pieces, from being thrown back and striking the operator.

Circular rip saws should be guarded by a skeleton hood. It is recommended that the hood be supported by a splitter located at the rear of the saw, the hood to be adjustable or, preferably, self-adjustable. In ripping lumber, the use of a pusher is strongly recommended. Saws should be guarded under table.

Circular crosscut saws having fixed horizontal bearings should be guarded by a skeleton hood. Swinging crosscut saws should have the saw guarded in an approved manner and have the table on an angle inclined toward the saw. All circular saws should be guarded under table.

Circular saw mills should have lower part of saw guarded to at least three inches beyond the teeth of saw. In setting saw mills, a clearance of at least 3 feet should be allowed between any fixed object and any part of the moving mechanism.

Many of the accidents on the circular saw are due to the fact that the operator has not been properly instructed. The saw being so apparently simple to operate, he is apt to believe it requires little or no skill, and so he does not observe certain precautions and is therefore sure to meet with accident.

Accidents are caused by improper adjustments, as in the case of the gauge being set close to the saw, while the wider portion comes on the left side of the saw. As this does not leave sufficient clearance between the guard and the saw, the right hand, which alone should be kept for preventing the work from slipping, cannot be used and the left hand, if the work does slip, is sure to receive injury.

The saw should be raised only sufficiently to insert the thickness of material being cut (which in part may prove a protection to the operator, if his fingers should come in contact with the saw). The gauge also should not be too high.

An exhaust system keeps the saw table free of saw dust and saves the operator the necessity of brushing it away, and also acts as a guard to the saw, especially on the lower side.

Circular saws should be carefully inspected. They should be free of cracks, and run true. The hole for the spindle should properly fit the spindle. The saws should be carefully set and sharpened.

The band saw should have both wheels encased and be provided with a shield extending down to the guide rolls.

The saw blade should be carefully braised, making a smooth joint, and the pitch and size of teeth not altered. The top and bottom wheels, as well as the rim, and return part of the saw should be totally guarded, for if a band saw breaks, it is carried around with the wheels and should it come out of the lower part of the frame, the operator would be cut about the legs, and if from the upper part, about the head or body.

It is not an easy matter to guard the danger zone or exact point of operation, still there are a number of guards that can be placed on part of the unused saw blade, and brought down to the rolls or thickness of the work. Tubing may be used to guard this unused portion of the blade.

The band saw should track true and run free in the work; stock should not be fed faster than the saw can free itself. Odd contours or curves of short radius should not be attempted unless the saw is narrow enough to keep itself perfectly free.

The jointer is used principally for obtaining a perfectly flat surface on one side of the board, prior to passing the board through the surfacers, which in turn plane it to a uniformed thickness. The jointer consists of an iron table varying in width and length. The top of the table can be moved quickly up and down by means of a large hand wheel. This raising up and down of the table top makes it possible to vary the thickness of the cut.

If the cutter head is of the old or square pattern type instead of the round or safety pattern type, it is a most dangerous feature. In fact it might generally be said that the square head is what makes the jointer dangerous, as the upper sides of the knives are exposed. Should the hand of the operator come in contact with the knives, it would usually be drawn in, resulting perhaps not only in the loss of the fingers but of the hands as well.

The round safety head with its four knives tends almost to fill the throat or opening through the center of the table, and if the operator's fingers do come in contact with the revolving knives, he is likely to loose only the tips of his fingers. With the round head used in conjunction with the various guards that can be placed over the knives, the jointer becomes far more safe to the operator.

The operator should be carefully instructed, to secure his knives to the head to adjust table, to take the proper cut, not to use too short length of boards, to see that his hands are never directly over the knives, that the material is free of loose knots, and that the grain of the wood does not act against the knives. In using the safety head which may be designed for four knives, if only two knives are used, wooden strips should be substituted for the absent knives in the safety head.

Another type of guard is so designed that it can be raised and lowered from the side of the jointer and allows the work to pass under it, but the operator's hands pass over the guard.

The shaper is sometimes called a variety molder. It may have one or two spindles. The shaft extends vertically upward through the table top. In the latest models, for easy and steady running at high speed, the spindle is designed with ballbearings. Various shapes and lengths of knives are secured in the spindle head. The high speed at which these knives revolve, as well as the exposed condition, make this machine, without doubt, one of the most dangerous in woodworking machinery.

The guard for this machine, offered by one of the leading manufacturers, is attached to the table, behind the spindle, in order to be out of the way of the work. A curved wooden block is secured to the end of spring bars, so as to rest upon or near the work. The vertical position of both bars and block is controlled by a screw turned with a hand wheel, which adjusts the up and down motion. The spring bars are also adjustable, so as to fit various size cutters.

Any guard designed for this type of machine must not hamper nor interfere with the work. This machine is not an easy machine to connect with the exhaust or blower system, but so connected, there is less need for the operator to bring his hands near the revolving spindles in order to remove the sawdust.

Safety shaper heads or round safety cylinders are being used on shapers as on jointers. There is less likelihood of the operator's losing control of his work with the round head, than with the ordinary square shaper head. This safety head, however, should not prevent the using of some kind of guard in addition.

Knives should be secure to all heads. Bolts and nuts securing knives, should be carefully gone over before starting up machines. Where helper secures or adjusts knives, care should be taken that he is away from machine. These machines vary so much in design that each becomes in part special, but many of the same rules may be applied as those used for surfacers and shapers.

All exposed gears, rolls and sanding drums should be guarded.

Exhaust systems here also play a two-fold purpose removing the sand and dust, as well as protecting the operator. Feeding and receiving tables should be provided so that the operator is not compelled to place his fingers near the roll.

Disc grinders, if supplied with table rest, should be fully guarded underneath. Care should be taken to see that paper is properly secured and that the butterfly nuts if holding a ring, do not project to catch the operator's hands.

Where, in special manufacture, the whole face of wheel is not used, both top and bottom of disc should be guarded.

Injuries received on this class of machines are very painful, and the healing often takes longer than a severe cut.

Where large wooden discs are used, care should be taken to run them at the proper speed, to have them well built, perfectly balanced and well secured to the spindle.

Control should be within easy reach of the operator who should be fully instructed before being put on this class of machinery.

The CHAIRMAN:

I take pleasure in calling on Dr. F. D. Patterson, of the J. G. Brill Company, and ask him to discuss some of the matter which has gone before.

WOODWORKING MACHINERY.

Dr. F. D. Patterson, of the J. G. Brill Company, Philadelphia.

The subject which I have been asked to discuss is that of "Woodworking Machinery;" but owing to the fact that it has been so fully covered in the paper which was read upon this subject, I am simply going to make a few remarks, and then shall have the pleasure of showing you some lantern-slides, in which I shall try to illustrate some methods at the J. G. Brill Company, of guarding what we believe to be really dangerous woodworking machinery in Pennsylvania. We all know that woodworking machinery runs at a tremendously high speed, and it is essential that the tools shall be as sharp as it is possible to make them. It is absolutely essential in all woodworking mills that there must be no crowding, either of the machinery itself or of the material which is to be worked, around the machinery. This material should all be properly piled, and care taken that it is not piled so that it will spill and cause injury to those who are so unfortuante as to be in the vicinity. Another important essential of every woodworking mill is its lighting. I don't think this has been touched upon here, and I cannot lay too much stress upon the fact that not only must light be adequate but also so arranged that a man operating a high-speed tool does not have the direct rays come into his eyes. All lights should be properly shaded, and in that way accidents may be prevented.

The subject of dust and chip removal has been so thoroughly covered, yesterday and today, yesterday under the subject of "Blowers and Exhausters," that it needs no remarks of mine to emphasize the fact that dust does not help the atmosphere that men are obliged to breathe, and also that all chips must be removed as fast as they are made, because there is constant danger that a large chip may cause serious injury to any one close at hand. Proper flooring is also essential, flooring which is not only properly strong and smooth in order to support the weight of materials, but also gives protection in front of machines by means of some rough surfaces, either rubber or some one of the different abrasive metals, so there may not be danger of the men slipping.

We regard as one of the most important things that we can do in our woodworking department, the making of a careful and most searching investigation of every accident, so that we may find out the underlying cause, and take such measures as may be necessary in order to prevent the same accident occurring again.

After all is said and done, one of the very greatest essentials in any woodworking mill is the proper education of the men who are going to operate the tools contained therein. The day is happily

past, I am glad to say, in the majority of mills, when a man, saying he is an experienced woodworker, is hired at the gate and allowed to enter the shop without further examination. No man should be allowed to go to work upon any woodworking machine until he is instructed not only in the hazards of that machine, but also shown that he must take care that whatever he does is not going to result in injury to his fellow-workmen.

Competent foremen are absolutely essential in woodworking mills. They must keep up shop discipline and see that the work is carried on in an orderly manner.

I think I can best illustrate what we are making an effort to do in the way of guarding machines by some lantern-slides. The time is so short that I have not tried to explain the scheme of education which we have put in force to try to overcome the hazards of this particular form of industry.

(Lights turned off and balance of speech given with lantern-slides.)

The CHAIRMAN:

I should be very glad to hear any discussion of the Doctor's very ably illustrated talk, and I have no doubt he would be very glad to answer any question.

A MEMBER:

I am not going to ask for any details, but I should like to ask if copies of the illustrations that have been shown on the screen are available.

DR. PATTERSON:

I take great pleasure in stating that we have taken pictures of every machine that is guarded, and shall be very glad, indeed, to furnish copies of those photographs at the cost of their production.

A MEMBER:

In discussing the regulations for guarding woodworking machinery, all circular saws must be guarded, and I was just tempted to ask a question, how some are to be guarded; for instance a saw that is used to groove? I speak of the piano business, where you have to make a groove to allow the pedals to pass through. The factory inspectors have been figuring for several years how to put a guard on that saw. If they pass the proposed regulations and ask the manufacturers to put a guard on every circular saw, they are going to give somebody a fearful job. We could put a guard on that saw, but it wouldn't be of any use. It seems to me when the Committee considers saws, they should consider all sorts of saws, and see whether all could be guarded.

The CHAIRMAN:

I would state that in the discussions of your Committee, such cases were cited, and I have no doubt that an exception will be made to cover them.

Mr. C. B. AUEL, Director of Standards, Westinghouse Electric Company, Pittsburgh, Pa.:

Our experience has been that material that is being worked upon the groove saw, cannot be guarded, the material is frequently over the saw, this simply emphasizes what I have tried to make clear; no matter how much you may guard machines, you will merely help to reduce accidents, and whatever reduction you get above that, is simply by education, and no man not properly educated in the use of a saw should be turned loose upon it. It is not so much a question of guarding as a question of education.

A MEMBER:

That is my point exactly; only if the Department of Labor and Industry insists on making rulings and telling us what we must guard, we have to comply with the ruling.

The CHAIRMAN:

The law does not require impossibilities, and our Committee is anxious and careful not to attempt them. None of the regulations have gone out as formal law, and all have been held back for the benefit of your discussion. Such points as you raised will be carefully considered, and I hope we shall not be charged with any ridiculous demands.

A MEMBER:

Mr. Chairman, under the proposed regulations on rip saws, it states that the hood must be supported by a splitter located at the rear of the saw. Now, in a good many cases we have to remove the splitter. According to that requirement, we should also have to remove the hood. I find that it is frequently not good practice to have the hood and splitter in one piece; in fact, I think they should be separate, and find that in a number of plants they have them in separate pieces. I think conditions ought to be considered before requiring them to be in a single piece.

A MEMBER:

Mr. Chairman, I should like to ask if there is a guard that can be used in small shops, where one or two saws are used, and in pattern shops.

The CHAIRMAN:

There are guards commercially offered that are adjustable either from the standard outside of the table or from the splitter. As we have suggested, their practicability is open to some question; but I think you should have no trouble in finding a guard.

A MEMBER:

I might say I have investigated several guards, and have one on hand. It is almost impossible to use it. One man will come along who will use it. The next man will have to alter the guard, and it takes three times as long to change the guard as to do the work. I should like to get some help on this matter.

A MEMBER:

Mr. Chairman, for the information of the gentleman, I should like to state that the American Bridge Company, at Ambridge, Pennsylvania, makes a guard that can be used on any line of work. The guard itself can be raised and lowered with the plate. It is a large piece of steel that goes over the length of the table, covering it at all times except when work is done as in the process of grooving. In grooving, the guard goes beneath the table and returns afterwards. I believe that this guard is not for sale at the present time. It is manufactured by one of the superintendents of the American Bridge Company, at Ambridge, and further information could be secured by addressing that company. I think it will answer the purpose for grooving saws.

The CHAIRMAN:

I should like to say that in the Department of Labor and Industry there are quite a number of photographs and some few detailed drawings, of most of the commercial saw guards that are offered. That material is available to any of you at any time.

A MEMBER:

Mr. Chairman, I was one of the Committee on Woodworking Machinery, and we realized the importance of being fair to all concerned in circular rip saws, and the guard demanded or required for a saw of this kind. I shall read the words under Circular Rip Saws, to show that no ruling is intended to be a hardship to any one; "Circular rip saws shall be guarded by a skeleton hood. It is

recommended that the hood be supported by a splitter located at the rear of saw, the hood to be adjustable, or, preferably, self-adjustable. In ripping lumber the use of a pusher is strongly recommended. Saws shall be guarded under table."

The CHAIRMAN:

Mr. White, of Bloomsburg, will make a few remarks to us on the subject of flour mills, etc.

FLOUR MILLS.

Mr. H. V. White, Milling and Cereal Specialist, Bloomsburg.

My connection with the milling industry as a mill owner and operator, and as a past president and director of the Pennsylvania Millers' State Association, was probably the occasion for Commissioner Jackson's requesting me to aid in preparing a safety code for application to cereal mills, elevators and warehouses.

My first duty was to select a commission that should be comprised of men familiar with this line of work. On the 14th day of April last we met here with the Director of Milling Eningeering at State College, an expert engineer employed by the Hiner-Hillard Company, two mill-machine builders, and two practical mill owners and operators.

It was evident from the first that a code to provide proper buildings and methods of equipping those buildings might easily be suggested. But we found as we progressed that it was going to be very difficult to provide for the protection of the employee in the present mills in the State of Pennsylvania. Some of you may know that there is a variety of flour and feed mills in Pennsylvania that is probably not equaled in any other industry.

After preparing a code that covered the points that have been suggested by the last three speakers, we had it printed and circulated tentatively for suggestions from millers and those operating machinery. We visited the Millers' Convention at Buffalo, where practically all types of mill machines were exhibited; the State Millers' Convention at Atlantic City, and a number of large mills and elevators in different states. I have received a list of suggestions for changes and improvements to this code, that, as has been said by the National Council for Industrial Safety of Chicago, will probably make it the most complete set of rules for this class of work that has been prepared so far.

I have the tentative printed draft in form for distribution, and shall be glad to place it in the hands of any of you gentlemen, and be pleased to have your suggestions on the last page, which is left for that purpose.

We find that the suggestions are being received in a very friendly spirit by the majority of mill operators in mills of fair size. We are finding it very difficult to induce the owner and operator of small milling plants—and in these plants there is greater danger than in the larger ones—to take active interest in this work. We hope that when the code is printed and placed in their hands, they will see the value of it, and that we shall have no further difficulty in having them adopt the safeguards suggested. We earnestly solicit your co-operation in this work.

The morning session of the Safety Section adjourned until 2 o'clock P. M.

GENERAL SESSION.

Wednesday Afternoon, November 18, 1914.

Pursuant to adjournment, the Conference met in the House of Representatives, in Harrisburg, at 2:00 P. M. and was called to order by the Chairman, Mr. A. B. Farquhar, President of the A. B. Farquhar Company, of York, Pennsylvania.

The CHAIRMAN:

This session, I note, is to be devoted particularly to mediation and the question of employment. Now, in the early days, when I commenced business, nearly sixty years ago, there was no distinction of any kind between labor and capital. They all worked together. The laborer looked upon the capitalist as his personal friend. Both were interdependent, just as they are now. The laborer's condition was not so good then, however, as it is now. I think the reason of his being satisfied was largely because the capitalist and he, himself, were as one. They addressed each other by the first name, took interest in each other, and, in other words, followed the rule of the Great Carpenter of Nazareth, which is the best rule in business as in everything else. The invention of improved machinery has affected the laborer more than men in any other class. For instance, when I was a boy, a watch of this description would cost a hundred dollars. It took a man fifteen weeks to make it. Now in the Ingersoll Works he makes fifteen or twenty a day, and usually gets four times the salary he did then. In the days of my great-grandfather, only a few of the rich wore underclothing. But the result of increasing wages four times gave every poor man

advantages. Efficiency lessens labor, makes it easier, increases the output, enables larger wages to be paid, and, is a greater advantage to the laborer than anything else. It enables him to live cheaper. But I must not take your time, so shall come to my conclusion.

I take great pleasure in introducing your Governor, who, as you know, has been one of the warmest friends of both labor and capital, and has done all he possibly could do to overcome their differences. I can introduce him as my long, warm, personal friend.

GOVERNOR JOHN K. TENER:

Mr. Farquhar, ladies and gentlemen: This introduction by your Chairman, Mr. Farquhar, I, like yourselves, hardly know how to take. He introduced me as his long personal friend: it may be in years, or in inches!

I find it my greatest pleasure and most agreeable duty to meet with you at this time; when you are visiting Harrisburg for the consideration of the objects and purposes of this meeting.

This State for the past four years—and for that period alone have I the right to speak—has gone forward in all its departments, and in all its departmental efforts, along the several lines of work that you are discussing here in your co-operation with those departments. If any credit or any honor is to come from the accomplishments of this Administration, it will be in the doing of the real, practical things that count for the betterment of our citizenship, the conservation of life, the conservation of health and the conservation of property. This is not only true of this department, but also of the several departments of the State, with which, perhaps, you are not altogether familiar.

The Department of Labor and Industry is an entirely new one. True, we had a Factory Inspection Department heretofore, but its laws, and the provisions of those laws, so restricted the operation of the Department that it could not make itself of service in the fullest sense. Under the present laws, however, after the study has been made, and after the organization has become complete—and it nears that condition at this time—we expect most excellent results from the Department so splendidly headed by Dr. John Price Jackson.

Our other departments, many of which have been reorganized during this term, have shown excellent results. The Department of Insurance, the Highway Department, and the splendid efficiency of our Banking Department, the Adjutant-General's Department, the Attorney General's, and all the various departments of the State, have shown and are today showing, in my mind, the very highest degree of efficiency. The time was, for instance, when the Insurance Department was a laughing stock for some of the other states. To-

day, under the operation of the law passed during the session of 1911, that department now occupies a front rank. While, heretofore, the revenues from that source were small, and its activities restricted, today they are large; and at present there is not within the confines of this State an insurance company not properly capitalized, or an insurance company not properly managed. There are no wildcat insurance companies nor fly-by-night companies. They have all been put out of business through the splendid administration of our Insurance Department.

The same may be said of our Health Department. It was not sufficient to go about and say what should be done, and what we proposed to do, but we know that our Health Department has actually checked disease, has saved lives, and is doing all the work that our people can reasonably expect it to do.

I also expect this new Department to go forward and take its proper place, and to bring about its proper results. It should be, in my mind, the object and purpose of legislation and of executors to bring about—to actually bring about—the things sought for; not to talk about them, not to idealize in theories, but actually to have them come to pass.

During the last session of the Legislature, and the session before, we endeavored to have passed workmen's compensation legislation or an employers' liability act. I regret that during my term it has not been possible to persuade legislators—your representatives—to enact such a law. Some people object today, and say there is no reason why an employer should be responsible for the negligence and carelessness of an employee; and, putting it on that score, and if that were the only consideration, perhaps they are right. But to my mind there is a broader viewpoint. I believe that to a great extent we are all responsible one to another, and for another. It is not possible for all men, by reason of their mental development, perhaps, to secure such a place in the world as will make them independent workers.

We shall always have with us the unskilled laborer; the man who receives, and the man who only expects to receive the minimum wage. It is human for that man to live as others live. He marries and raises a family. To him they look for support. His daily wage is only sufficient for the wants of that family, and he must have that income daily, and must be assured of it. He is stricken by injury or death, and under our present law, in many cases, the employer is not responsible further. And what becomes of the family? Perhaps after endless litigation, years afterward, when the mother is gone or is in the poor house, and the children are in an orphanage, a few dollars come to them, the balance left out of court expenses and the contingent fee.

I firmly believe that there should be a law that will give to that family a compensation sufficient to provide for the maintenance of the family as though the bread winner were living, so that the mother may rear those children of hers in her own home and be absolutely independent of society—and it should not come as an act of charity, but as a definite, positive right. And so I believe in providing for those who work. For all people there should be that special interest and endeavor to bring about the real, to bring about the tangible thing that makes for the prosperity of the people. And this Department, it seems to me, takes that position in the provisions for its work, and will bring about a real, positive and definite improvement in conditions.

I have nothing but contempt for those coming into our State to say what should be done, and what is the ideal, and to advance the great theories they have to help and all of that, if they can't point out to us how and what to do and how to do it. That is what you do here. The word "engineer" for instance, suggests science and improvement. When you put into practice the thing that is scientifically correct, that is the ideal. And so in your consideration of the safety subjects which you will take up here, let it be to the end that some results, absolute, positive, tangible, helpful, will come out of it. Otherwise, all your talk, all your study of what should be done and what you would like to do, will be for naught.

I am very glad to have this opportunity to come here at this time, to come here on the invitation of the society, and on the invitation of Dr. Jackson, that I may meet with you and say a few words to you, and have the pleasure of looking at you and being with you.

The CHAIRMAN:

Mr. F. Herbert Snow, of the Engineers' Society of Pennsylvania, will now address you.

Mr. F. HERBERT SNOW, Past President, Engineers' Society of Pennsylvania:

Mr. Chairman, ladies and gentlemen, a few months ago the corporate members of the Engineers' Society of Pennsylvania elected His Excellency, the Governor, John K. Tener, to be the first honorary member of the Society. At that time the Society did not have an adopted form of testimonial, suitably illuminated, certifying membership in the Society. So figures and symbols were selected. This selection was engraved and inscribed, and I was chosen on behalf of the Society to present this Certificate of Membership to the Governor on this occasion.

Your Excellency, the engineers of the State have viewed with increasing admiration, during your term as Governor, your attitude towards their profession, and your efforts to accomplish the things relative to matters with which engineers are concerned. We believe that the things done by you are fundamental, and that therefrom larger things will flow for our especial profit and the general welfare of the Commonwealth. Please recall, as you may look from time to time upon this testimonial of our esteem, that it represents the unanimous vote of those engineering citizens of the Commonwealth who are appointed to come from every nook and corner of the State for the purpose of promoting the development of the hidden treasures of the earth, that were placed there by a beneficent Creator, for the benefit as originally intended, not of the few, but of all mankind. These aims of the Society have been exemplified in your conduct, and it is now my duty and privilege to hand to you this token of the highest tribute within the power of the Engineers' Society of Pennsylvania to bestow.

(Certificate of Membership in the Engineers' Society of Pennsylvania was then presented to Governor Tener by Mr. Snow.)

GOVERNOR JOHN K. TENER:

Mr. Snow and members of the Engineers' Society of Pennsylvania: I feel deeply honored at this exhibition of your goodwill, and this evidence of your belief that I have in any small way contributed to the cause of engineering, or have been helpful in any personal way to any member of your Society.

I do consider it a very great honor. I also wish to say, in confidence, that I try to act with propriety in the acceptation or declination of such honors. Already more than one college has been good enough to ask me to accept a degree from that college. But I have declined, for the reason that I don't believe any man should accept a degree of doctor of laws, let us say, unless he has really put something into the world, and done something as a doctor, as an inventor, or for the benefit of mankind, for the advancement in science, or literature or something of that kind. Failing in this, I do not feel that I could with propriety accept such a degree. It is different, however, in accepting this commission as an honorary member of your good Society, because I feel that I have had some part in creating and establishing the Department of Labor and Industry, and have co-operated with the officers there, and have endeavored to co-operate with you in all that tends to the safeguarding of life, limb and property. Hence, if I have been one of your co-workers, I feel that I may, with some degree of propriety, join with you, live with you, and associate with you in your club, in your society, and in

your endeavors. I have always felt that I have had in this administration the hearty co-operation of every one of you. It did not need this tangible evidence of your goodwill, because I have felt that part of it; but I sincerely hope that this will be an additional tie, an additional bond, that will bind us to the work you have in hand to do, and to the work that shall go on after this administration ends, and when your good work will show, as it must, in its proper light before the whole people of Pennsylvania.

I thank you.

THE CHAIRMAN:

We shall next call upon Mr. Louis F. Post, Assistant Secretary of Labor, Washington, D. C., who will speak on the subject of "Meditation."

MEDIATION.

Louis F. Post, Assistant Secretary of Labor, Washington, D. C.

Mr. Chairman, ladies and gentlemen: I am assigned, by the Secretary, to convey the grateful appreciation of our Department of Labor to your Department of Labor and Industry, and to the head of it, who has co-operated with us from the beginning of our Department in our efforts to promote industrial peace. The first mediation—the first or second—I think the first—that we had before us was in this State and at the suggestion of Commissioner Jackson. The result was a successful one. The Department of Labor of the United States is a young department, which hopes to co-operate with the Departments of Labor of all the States of the Union. So far it has had the direct co-operation of the Department of this State only. I hope that if it is represented at a gathering like this of any State hereafter, it will not be necessary to confine that expression of appreciation to one state.

I have been asked to discuss the subject of "Mediation." I shall not undertake to go into the merits of the questions that give rise to the necessity for mediation. Whatever our feelings are, whatever our wishes may be—we must accept as a fact that there is such a thing in our country today as industrial warfare, and that there is a great desire for industrial peace. While it may be that mediation cannot bring about industrial peace, because mediation alone cannot remove the causes of industrial warfare, yet there can be great amelioration through mediatorial services.

The Department of Labor of the United States was established like your own, not for the purpose of throttling wage-earners or assisting employers particularly, but for the general public interests. It is the federal representative of the interests, especially of the wageworkers of the United States. That is no small interest.

The wage-workers of the United States number over one-third of the entire population; and if you take their families into consideration, over one-half the population of the United States is a wage-working population today, depending upon wages. Considered even as a financial interest, theirs is an extremely large one; yet it required fifty years of agitation to bring about a representation in the United States Government of the interests of this great body of people.

The agitation for it began immediately after the Civil War. One thing and another delayed it until there was created a department in the interest of commerce and labor, uniting the two interests. Finally, less than two years ago, that department was divided into the Department of Commerce, created in the interest of business generally, and the Department of Labor, created in the interest of wage-earners. This is the language of the statute: "The purpose of the Department of Labor shall be to foster, promote and develop the welfare of the wage-earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment." I wish to emphasize the word "profitable." It is on this basis that mediation must be founded and directed. The broad purpose so declared opens up opportunities that even the prophetic eye cannot foresee. It may be that in due time the Department of Labor can reach underneath this great industrial struggle and find out some of the underlying causes and possibly remove them. But its present express authority relates only to ameliorating the general conditions of wage-earners and trying to bring about a semblance of industrial peace through mediation.

The section that gives the mediatorial authority is in this language: "That the Secretary of Labor shall have power to act as mediator and to appoint commissioners of conciliation in labor disputes whenever in his judgment the interests of industrial peace may require it to be done." Just one moment as to what that means. We are entering here upon a new work, less than two years old; and through this Department, less than two years old, the wage-earners have a representative at the council table of the President of the United States. Now what do "mediation" and "conciliation" mean? I take it that the Secretary is the national mediator in labor disputes. Of course, he cannot be present in every dispute, and perhaps it is not best that he should be present in any, but should guide the mediation. He is, therefore, authorized to appoint commissioners of conciliation whom he may send here and there, wherever necessary, to bring about peace where there is industrial fighting or war.

A misunderstanding has arisen. Some business men have supposed that this authority is of an arbitrary character and therefore that a former official of organized labor ought not to be at the head

of this Department because he represents a particular interest and could not arbitrate fairly. As a matter of fact arbitration is not mediation. Arbitration and mediation are two entirely different things.

Perhaps I can explain the difference better by giving you an outline of the mode in which the Department of Labor of the United States works. In the first place, if there is a labor dispute anywhere, the Department of Labor has the power to interfere by its mediation without anybody's request. If the public peace should be disturbed to such an extent that the Secretary of Labor thought it necessary to intervene under his authority, he would undoubtedly have the power to do so. Whenever either side to a labor dispute asks the Secretary to intervene, he communicates with the other side to see if they will accept an endeavor to bring about peace wherever there is fighting. In the first place you must get the two sides, the fighting employers and the fighting wage-workers, to negotiate between themselves; for the function is one of negotiation such as that of the Secretary of State rather than that of a judge—mediation instead of arbitration, as I have already indicated. The counciliator is appointed and tries to get the two sides together without any negotiator, without any mediator. If he fails, then he tries to get both sides to allow the commissioner of conciliation to negotiate between the conflicting sides, trying to bring about an understanding. If he fails in that—and if either side refuses, he does fail—if he fails in that then he tries to get both sides to submit the question to arbitration—not the arbitration of the Secretary of Labor and not the arbitration of the commissioner of conciliation—they expressly refuse to participate in arbitration. Arbitration is a judicial function and if the Secretary of Labor or his commissioner of conciliation should sit as arbitrator in any case, their decision would be of a judicial character and would constitute a precedent. From that time forward the Department would be embarrassed by its own precedent; for either side might say that the Department has already committed itself to this or that line of policy, and what is the use of referring a decision to it. So we refuse to participate in arbitration. That ought to be understood. When the Department cannot get parties to negotiate between themselves and when either side refuses to arbitrate, then the Department has no other power and can do nothing more than to make public the circumstances and facts so that the general public may understand on which side the blame lies.

In the practice of mediation I shall give you one case which will explain better than any abstract statement. There came in at one time an application, from an employer in this case, asking mediation. He had a strike on his hands. The Department sent a com-

missioner of conciliation to that shop. He found that the men had gone on a strike. They were willing to accept mediation and so a mediation or negotiation was made. It took several hours to get those two sides to agree. Finally they were brought, by persuasion, to meet together in the factory, the representatives of the labor side on one side of a table and the representatives of the shop on the other, all knowing the circumstances, and the representative of the Department acting simply as moderator to preserve the peace and to bring about an understanding. "What is your complaint?" he would ask of one side. "What is your answer?" he would ask the other. "What do you say to this, and what is your answer?" and so on and on. An hour of that sort of thing and a lot of wrangling brought these two sides, the men facing each other, to an understanding. Before that gathering dissolved, it had made an agreement which was satisfactory to both sides. That is one illustration.

But if either side refuses, of course, that cannot be done; and in some instances one side has refused. It is a fact that the only side that has refused to negotiate since the Department was established has been the employers' side. The instances are few but invariably it is the side of the employer that has refused either to negotiate with the men directly, or to allow the Department to act as intermediary, or to arbitrate the differences. That has happended in only four or five instances out of about forty. Something like thirty-five cases have been settled in this fair and easily adjusted manner.

One of the cases that could not be settled was the Colorado Coal Strike. The employers would not enter into any negotiation whatever. They demanded unconditional surrender.

On the other hand, in cases equally as important as the latter, the public peace was preserved. You know of the great struggle down in West Virginia. You remember that there was civil war there. The whole State was torn up because of these differences between coal miners and coal mine owners. That was settled when a Senate Committee got in and investigated and a contract was made between those in conflict. The Department of Labor had nothing to do with that particular case. At a certain point farther down the Kanawha River, the employers found that they were at a disadvantage on account of the contract with those farther up the River and they asked mediation. In that case it was again the employers—the employers who asked it. Both sides were reasonable. They were angry but well disposed. They were brought together, they faced each other and stated their difficulties, the Secretary of Labor sitting as mediator between them, and they agreed upon a settlement. The strike just ready to break was settled to the satisfaction of both sides and of everyone concerned.

Another of the mediatorial activities of the Department of Labor was in connection with the great lakes. You don't know how near the great lakes came to being tied up last summer. You don't know it because it did not happen. It was on the verge of happening and would have happened except for the power of the Department of Labor to mediate such differences. A Department that has charge of the safety of steam vessels had made a requirement. There arose a dispute between the organized owners of tug boats on the great lakes and the organized workmen on those tug boats. The Department of Commerce had no power to look after the interest of the wage-earners. All their power lay in making provision for safety and they made it. This threw out a contract between those organizations. It could not be carried out, and the employees and employers were unable to come together. The boats had even been tied up and the men discharged, when the men asked the mediation of the Department of Labor. A conciliator was sent to Buffalo. After some difficulty he succeeded in getting the employers' association to agree to mediation. In a few days after, a contract was made between them and all fear of a tie-up of the great lakes had passed.

There, my friends, is a general outline, roughly told. I have tried to make a little picture of what this new Department is trying to do. I want to impress upon you that it works as the official representative of the wage-earning interests of the United States, not as a representative of wage-earners in a partisan way; not as a lawyer represents his client, right or wrong, withholding the merits if he must, to carry his point; not in that way, but as the Secretary of State, representing our government, nevertheless treats other governments with fairness. That has been the policy of the Department of Labor. Representing especially the wage-earners' interests of the United States, it nevertheless represents them with fairness to all other interests and in behalf of industrial peace throughout the United States. And in that work we have had no more efficient, no more active, no more trustworthy co-operation and assistance than we have had from your Department of Labor and Industry in this State of Pennsylvania.

GOVERNOR JOHN K. TENER:

We have all been very much interested in the talk of Secretary Post, and I am particularly glad for his information that Pennsylvania is co-operating with the Federal Department in mediation and in the efforts of the Labor Department of the United States.

Perhaps I gave the impression that our own Department, by reason of its recent creation, had not yet entered fully upon its duties and the accomplishment of them; but I do want to say at this time and in the presence of the representatives here and of the

representative from the Department of Labor of the United States, that in our mediation work our Department has been very potent; in fact, we believe that it has been the potential factor in solving, in settling and bringing about peace in many labor disturbances and strikes and lock-outs. I think that that work alone justifies the creation of our Department of Labor and Industry. It has done splendid work in harmony with the efforts of the government in just such manner as has been explained to you by Secretary Post, and I want to thank him for our people and for the representatives who are here today. I am usurping for the moment, perhaps, the prerogatives of the Chairman, but I was so particularly interested in Mr. Post's remarks that I wanted to have him know that the State does appreciate his coming here today and appreciates the opportunity to listen to him and learn from him.

The CHAIRMAN:

I shall now introduce to you, Mr. H. H. Wheaton, Supervising Investigator of the Department of Labor and Industry, who will speak to you on the subject of "Unemployment—A Program for a State Policy."

UNEMPLOYMENT—A PROGRAM FOR A STATE POLICY.

H. H. Wheaton, Supervising Investigator, Department of Labor and Industry.

Probably no other spectacle interests and appeals to the mind of the average person more than the honest man seeking employment and out of work. If you have seen, as I have seen, many hundreds of men going from place to place looking for employment, you will appreciate how serious is the plight of such a man on such a quest. I was in Seattle, Washington, last summer and made a tour of investigation through the private employment agencies, and through the lodging houses of that city, both public and private. I found there men from Harvard and Yale, men from eastern and western universities, men who had been engineers, men who had been skilled artists and architects, men who had been engaged in the skilled occupations and some in the professions as well as those engaged in unskilled labor. Entering a lodging house maintained by a religious organization, I found lying in rows upon the rough pine floor, or upon pieces of the day's newspapers, several hundred men trying to sleep in this uncomfortable position. Some were on benches, some were on old counters which had been procured from stores, some were on the benches in the mission, some were under the benches. Now you will find that condition, to some extent, in the State of Pennsylvania. Those men had not in all instances come to this condition by their own volition. I looked into the history of some of these men. I went around with a man who was himself

down and out and who had organized many of these laborers into an itinerant workers' union. This man told me the history of many of these men who were lying on the floor and on the benches, and he told me this interesting fact: That many of them, starting with a small business in the Middle West, had been lured to the extreme Pacific Coast by reason of fictitious and highly colored land advertisements, had invested their small capital and expected in a year or two to become possessors of real estate and become business men of considerable moment. After a time they found they had been deceived, they had lost their money and gradually they became casual laborers. Gradually they dropped in the scale of employment down to the man who could do nothing but temporary work; sometimes upon the street; sometimes in the lumber regions, and sometimes in the mines. Usually they began as small business men or skilled employees and drifted down the scale by reason of the variations in the labor market, until they had lost all ability to hold a job, because the thing that made those men want to keep a job—ambition—had been taken away from them by the temporary nature of their employment. Now, gentlemen, and you men and women who are interested in the down and outs, these men had come to this condition because they had been driven from job to job. Many of you hold permanent or fairly steady positions. You have a personal ambition in your employment. You achieve the desire to accomplish something; but how if that employment should cease at the end of a month, unexpectedly; how if the industry shut down unexpectedly? Could you, thrown upon the street, turn and get another job? If you could not do so, do you think the spirit of ambition that has made you want to hold steady employment, would be there? It has not proved so in the many hundreds of instances which have been investigated by various labor departments and by the United States Industrial Relations Commission. They find the thing that makes a man want to stick to his job has been taken out of him by reason of the casual nature of his employment.

Now before I go into the main portion of my address, I want to call your attention to one thing: That this condition of the laborer I believe cannot, at present, be reached fundamentally and those suggestions which I shall make subsequently, will be made from the temporary standpoint only. I do not believe that fundamentally you can solve the problem of unemployment and of many other industrial conditions until the cause back of employment and unemployment has been reached. What is that? Labor depends upon industry for its work. If industry and business itself is not in a healthy and wholesome condition, then the labor market and laboring men are equally affected. We cannot hope to have steady,

regular employment, if industrial and business conditions are not well balanced. Labor depends for its means of sustenance upon business and industry. You cannot, therefore, standardize employment, remove unemployment, until you have begun to standardize business and industry itself. All other propositions—public employment agencies, bureaus for relief and assistance, regulation of private agencies and any other means suggested—are only temporary propositions to be employed while you are achieving ultimately some sort of standardization of business itself. I know that many of you will think that this is, perhaps, a little extreme, but when you think of the ultimate idea of having to satisfy a body of laborers and satisfy manufacturers and employers who ought to have steady employees, you will finally come to agree with me that some sort of standard on a rational, sound basis, is essential and necessary.

Now the Department of Labor and Industry, during the last three or four months, has been making some investigations of the conditions in Pennsylvania. We have circularized about 1,800 industries, each of which are employing in normal seasons over 100 employees. We have also circularized the mayors of all cities with over 5,000 population. With reference to the industries, inquiry was made as to the minimum number of employees between June, 1913, and June, 1914, the date when the minimum occurred, the maximum number employed during that time and the date that the maximum occurred, whether the industry, was seasonal or not, the approximate number of employees regularly employed by these industries and the number of employees at work in June, 1914.

From the mayors we inquired as to the number of licensed employment agencies and whether these employment agencies were able to cope with the unemployment, throughout the year, in their particular community.

Now we find, in the first place, that the minimum number of employees in nearly every instance was less than the approximate number of employees required for the manufacture of products of these respective industries. It showed further that the number of employees at work in June, 1914, was not equal to the regular force required. Now this tends to indicate that many men ordinarily employed by Pennsylvania companies are out of employment at the present time and have been out of work during the year. For example, one large plant which ordinarily employs 15,000 men, reports that in May, 1914, it had on its pay-roll only about 12,500; that in June, 1914, it had slightly over 13,000. Another plant which requires a normal force of 5,200 men, reports that in March, 1914, it had only slightly more than 5,000 and that in June, 1914, it had slightly less than 5,100 employees. I have selected some of the less extreme figures so as to present a fair average and these figures are quite typical of the results sent in.

We circularized about 1,800 industries. Out of that number, up to October 1st, about 1,000 replied, and we have tabulated, for various reasons, only the replies of 802. Now we find that the minimum number of employees between June, 1913 and June, 1914, was 323,415 for those 802 industries. We find that the maximum number was 449,138. We find that the number employed June, 1914, was less, 364,937. We find that the number of employees required to produce the maximum output was 437,542. Now the difference between the minimum and the maximum number of employees, during that year was 125,723 men. Note the maximum of 449,000 and over, and then the fact that out of that number, 125,000 and over were at different times during the year out of employment. Now the average decrease in the number of employees from June to June from the maximum number employed was 84,339, and the difference in number of employees required for maximum output and minimum number of employees is 113,239.

Following this inquiry, we took into consideration the reports of the mayors to get a further idea of the state of the labor market. Many mayors reported that in their respective localities there were many men seeking employment. They, of course, ascribed this to a very great variety of reasons, one of which is that the plants are not running full force or have shut down. Owing to the fact that not all the companies and cities have sent in reports, it is impossible to estimate the approximate number of unemployed in the State. I think the fact that the 125,000 have been out of employment at different times during the year is sufficient to call to your attention the urgent need of consideration of the subject.

Now, in the second place, we find from the reports of the various cities, that the private employment agencies are in a chaotic condition; that private employment agencies are under State regulation in the first and second class cities, but not in third class cities. They must procure a license, pay a fee and submit to certain regulations. The employment agency is a peculiar institution. A man comes to the agent and asks for a job. He says, "Pay me two dollars and I will send you to X & Co." The man is sent to X & Co. but does not secure a position. He comes back to the agent and is sent again. Pretty soon he gets tired of going out if he does not get a position and his fee is generally lost. This is true not only in Pennsylvania but all over the United States. The private employment agencies are taking advantage of our workers at every turn. I personally have taken or have seen the affidavits of several hundred men who have been defrauded by employment agencies. All this goes to show that the employment agent must be brought under adequate regulation; some standardization must

be put into this phase of the situation in this State. We must put a curb not only upon the employment agency in the first and second class cities but upon it in the third class cities and boroughs and in other communities. It is absolutely essential that the private agency be put under State supervision and State regulation in order to curb the malpractices of this business.

The padrone also represents a peculiar institution. He makes a contract with a railway company or highway contractor to supply so many laborers or all the labor required by the company during the year in consideration that he have the privilege of housing the men and supplying them with provisions. The minute this contract is entered into, the padrone advertises through his agents and through the newspapers to get employees for his particular company. The men apply at his office. He puts them under a regular contract and the form of the contract is so worded that the men are compelled to buy provisions from the padrone and his commissary agents in those localities to which the laborer is sent. The men are compelled to live in the padrone's shanties which he provides, and for these accommodations they are compelled to pay a stipulated amount per month. Now here is the evil: A man goes to the labor camp or shanty and lives there. He may or may not buy provisions from the commissary store. If he does not, the amount which he has agreed to purchase from the commissary store is deducted from his wages and turned over to the padrone whether or not the man has bought one cent's worth of provisions from that store. We know this to be an actual fact, and I have proof of many contracts of that nature at hand. Here is the further situation: The man who does purchase from the commissary store is charged up on a slip of paper or in a very inadequate ledger. He comes to the commissary store and buys twenty-five cents worth of beans or peas or bread. Twenty-five is put down on a slip of paper, sometimes on the workman's slip of paper and sometimes only on the padrone's book; not even his name is entered nor his work number. When the end of the month comes or before pay day, the padrone or commissary agent presents a list of the employees who have made purchases from his store or who owe shanty rent. These lists are made out and the number of the employee set opposite the name and only the amount of the deduction is set at the right-hand side of the page. That sheet is turned into the office of the railway company or highway contractor, but no audit or checking up of that account is made by the railway company or highway contractor or whoever may be utilizing the services of the padrone. Frequently, the commissary agent puts down whatever charge he wants to against the man, turns it into the company and demands the claim be paid, and it is paid by the railway company or by the highway contractor without one

question being raised. The man cannot reach the company because he cannot speak English, or if he does complain of the deduction, the padrone sees that he is discharged and he loses more in the end than if he had endured the exorbitant charges without complaint. Some of the western railroads have remedied this evil by auditing the padrone's books or by requiring the padrone to submit a bill in triplicate to the man for signature and approval before the claim is put before the company. When the approval is secured, the proper amount is paid by the company and deducted from the man's wages.

Such malpractices as these are found in Pennsylvania and seriously affect the labor market, producing unemployment, because it drives many of the men to quit their positions on the highway and on the transportation lines through dissatisfaction with the exorbitant charges and bad treatment. This constant shifting makes the labor force unstable. The railway company or highway contractor or whoever may be dealing with the padrone is more or less dissatisfied all the time.

One of the things through which we propose to reach this unstable labor market and to reach the private employment agency is a State Bureau of Employment. It is not a new proposition. At the present time there are nineteen states and fifteen municipalities which have establishd public employment bureaus. The State of Ohio was the first to establish such a system in 1890, and it now has five employment exchanges. Nebraska was second in 1897; Illinois and Missouri, third, both establishing their offices in 1899; Kansas, West Virginia and Wisconsin, in 1901; and last year, in 1914, the State of New York ventured into this great field by passing a law for the establishment of public employment offices in that state. So you see the proposition is not a new and untried thing. It will also be observed that in many of the states which have established agencies, there has been an increase in the number of exchanges and branch offices created, further proving the practicability of the proposition.

Two bills have recently been introduced into Congress providing for a National Bureau of Employment. The State of Pennsylvania will be out of harmony with the general tendency, with the movement throughout the country, unless it takes steps to permit the establishment of such a bureau.

The CHAIRMAN:

If Mr. John Monteith, of the Insulators and Asbestos Workers, is in the room, we shall be glad to hear from him now.

FIRE PREVENTION.

John Monteith, Representative, Insulators and Asbestos Workers, Scranton, Pa.

Pipes through which steam is conveyed to various points in buildings, factories, private residences, etc., when left in an uncovered condition will endanger, by fire, the structures in which they are placed.

These pipes, as a general rule, are installed close to floors and walls, in shafts and various out of the way places. In many instances they come into contact with the woodwork, such as joists, flooring, carpets, etc. Becoming very hot by the steam going through them, they cause the wood to dry out and char and a little breeze would then be an able assistant in fanning it into a blaze. Only last week I did a job for a large concern in Philadelphia where I had to cut the burned wood away from around the pipes.

Oily waste paper or any flimsy material thrown or laid carelessly upon or near these pipes would soon be in a state to catch fire and perhaps cause great loss both of life and property. Such conditions frequently exist in private residences.

I have seen dust that had collected upon steam pipes catching fire and setting the wood close to the pipe on fire also. If this should happen at night time, a serious fire would result.

All pipes should be properly covered with 85% magnesia or asbestos covering which is thoroughly fireproof. There are cheaper grades of pipe coverings than these, but they are not fire-proof and are almost as dangerous as the unprotected pipes themselves. I covered the pipes in a large mansion just completed. One morning about 7:30 A. M., the gardener in going to look at the boiler, found the cellar full of smoke and upon investigation found six feet of the covering over the smoke flue on fire. If this had happened during the night, the result might have been serious.

It is most important that boilers should be properly covered with 85% magnesia or asbestos covering. The proper covering for smoke flues is a very important matter also, as there is a safe way and a very dangerous way. The safe way is to have the metal of the flue first covered with not less than one inch air spacing metal, then upon this, a proper thickness (not less than two inches) of 85% magnesia properly applied. This method will preserve the metal which the flues are composed of and render it absolutely fireproof. The dangerous way is to cover the flue metal with bricks or any other material except 85% magnesia in solid form.

The CHAIRMAN:

We shall now hear from Mr. A. R. Jerling.

Mr. A. R. JERLING, Representative, Street Railway Employees of Pittsburgh:

There are some conditions prevailing in this State which it is considered advisable to bring before this conference, and which it is believed will come within the scope of its influence.

The representatives of organized labor, in attendance here, have appointed a committee to arrange these various suggestions. It will be borne in mind at the outset that these matters are not only pertinent to the wage-earners of the State, but pertain equally to the welfare of the general public.

They are stated as briefly as possible, for it is recognized that as much time as possible should be saved in presenting them:

1st. The establishment of State Employment Agencies.

2nd. The passage of a law requiring the erection of convenient and well-equipped washing and dressing rooms, at all places where workers are employed.

3rd. That wage-earning teamsters, drivers of vehicles, chauffeurs, and truck drivers, be required to pass an examination to prove their competency, and that employers be required to keep their stables and garages in a safe and sanitary condition, and adequately lighted.

4th. That there be better sanitary conditions in barber shops, for the employees therein, and also for the convenience of the general public, and that a license law, such as is being enforced in other states, be passed at the coming session of the Legislature.

5th. The manufacture of clothing in this State is carried on largely in the homes of the individual workers. The danger of contagious diseases is obvious. It is, therefore, suggested that proper legislation be enacted to abolish what is known as home-work.

6th. We wish to state that the recommendations made by the Industrial Board, at the hearing in Pittsburgh, regarding the Baking Industry, are heartily endorsed and recommended for adoption.

7th. We make the following recommendations for adoption by Trolley Companies in this State: The use of the automatic, instead of the link coupler, now frequently used and dangerous to the employees, the air-brake to be the standard of the State, instead of the hand-brake; that vehicles using the public highways between sunset and sunrise, be required to display lights that can be observed from the front, back and sides; the use of vestibules on summer cars, as well as the abolition of outside running-boards on these cars.

8th. We recommend that the number of Deputy Inspectors be doubled.

9th. Papers bearing particularly on some of the foregoing subjects will be presented and read to the conference for its further enlightenment.

The first of these suggestions, "The Establishment of State Employment Agencies" will now be presented by Mr. J. Charles Hackett, in behalf of the Iron City Central Trades Council.

EMPLOYMENT AGENCIES.

J. Charles Hackett, Financial Secretary Bartenders' Union, Pittsburgh.

The purpose of this article is to attract the attention of the public to the great and growing evil of private employment agencies. It is to be regretted that Act No. 267, creating the Department of Labor and Industry, did not provide for the establishment of a State Bureau of Employment in the Department of Labor with sub-bureaus in the various large industrial centers of our Commonwealth.

The general public have been so greatly abused by private and fake employment agencies, that various states, and even cities, have enacted legislation for the protection of the employers and employees, as well as of the public at large. These private agencies are so profitable that they are becoming extremely numerous; their greatest harvest is during periods of industrial depression, when the poor working girl, who is seeking employment at domestic service or other work, pays the agencies from $2.00 to $5.00 for directions as to where she may secure suitable employment, while the lady, who is classed as the employer, desiring the services of a domestic, pays the agency from $5.00 to $10.00 for securing help. The skilled mechanic and the general laboring class must likewise pay tribute, while the employers must also pay the agency for furnishing them with employees.

It seems from the numerous complaints that are made, that the only object of the agency is to secure its fee for advancing information. It is a matter of public knowledge that the results of investigations conducted by our Federal Government show plainly that many of these agencies do an interstate business, grossly misrepresenting the terms of employment, the wages paid, and the general working conditions.

These agencies have gathered together the unemployed of our industrial centers, shipped them to other industrial centers throughout the State, and even into other states. Upon reaching their destination, these unfortunate victims have been required to accept the employment offered, at wages and in working conditions worse

than they have ever experienced, and very often, they have been subjected to peonage, unable to escape from the guards having charge of them. Hence we urge the establishment of a bureau of employment, with agencies located in the industrial centers of our State, to which the employer may advance information, specifying the number and class of employees he desires, together with the wages paid, hours of labor, etc., and from which the working man or woman may obtain this information. The expenses in connection with the operation of such employment agencies should be borne by the State, because of the great good that will result in securing a proper and efficient distribution of labor.

Mr. A. R. JERLING:

The second recommendation, "The passage of a law requiring the erection of convenient and well-equipped washing and dressing rooms at all places where workers are employed," will be presented by Mr. John Hoehn.

WASH AND DRESSING ROOMS.

John Hoehn, Iron City Central Trades Council, Pittsburgh.

In behalf of the working people of this State, we wish to recommend to the Industrial Board, if they have authority on these premises, to draw up rules and regulations requiring the employers in the various industries to provide, in connection with all establishments where persons are employed, suitable wash and dressing rooms, with running hot and cold water, shower baths, and metal lockers for clothing.

The 1911 session of the legislature passed an Act of this kind which applied to moulders exclusively. This Act was amended at the 1913 session, authorizing the Department of Labor to enforce its provisions. Act No. 466, regulating the hours of employment for women, provided for the wash and dressing rooms for females. It must be conceded that if wash and dressing rooms are necessary for the health of the female employees and the moulders in foundries, they are equally necessary for the workmen in other industries. For the lack of such legislation, it is a common occurrence to observe workingmen, stripped naked, in the open parts of the various mills, attempting to wash and dress themselves, exposed to the cold, and endangering their health. It is not uncommon to see small wooden cupboards throughout the plants, which serve as lockers to protect the clothing they wear to and from work, from becoming saturated with dust and dirt. Section 14 of Act 267 provides that the Department of Labor shall require protection for the health, as well as safety of all persons employed in the various industries.

All experts on Hygiene and Sanitation agree that the health of the employees cannot be properly conserved without suitable wash and dressing rooms. A great majority of our working people are too poor to have the proper facilities in their homes in order to keep their bodies in a clean and healthy condition. They even suffer much embarrassment and the traveling public are very much inconvenienced when the workman is required to travel by train and trolley to and from the place where he is employed, in his soiled working clothes, which often come in contact with, and soil the clothing of, other passengers. The soiled clothing of the average worker going into his home, which is usually very crowded, if wet, makes the home insanitary and uncomfortable for all persons therein.

There is no legislation that would go further to protect the worker's health and improve the sanitary conditions of his home, than that of which I now speak.

If Act No. 267 does not give the Department of Labor authority to enforce rules and regulations covering this subject, then we ask that the Department of Labor recommend the necessary legislation to the next session of the Legislature.

Mr. A. R. JERLING:

The third recommendation "That wage-earning teamsters, drivers of vehicles, chauffeurs, and truck drivers, be required to pass an examination to prove their competency, and that employers be required to keep their stables and garages in a safe and sanitary condition and adequately lighted," will now be presented to you by Mr. Fred Reilly.

ACCIDENTS IN PUBLIC THOROUGHFARES AND HIGHWAYS.

Fred Reilly, Iron City Trades Council, Pittsburgh.

The object of this conference is to provide ways and means for the protection of the life and health of the employees in various industries, and of the public in general. As a representative of the Iron City Trades Council, of Pittsburgh, I wish to direct your attention to the enormous number of accidents occuring on the thoroughfares of our cities and towns, and on the public highways. through the lack of laws, rules and regulations, governing the employment of chauffeurs, truck drivers, and teamsters. I have no statistics to offer, giving the number of accidents, daily, or annually, occurring in this industry. The information contained in the daily papers, giving an account of accidents due to the carelessness of vehicle drivers warrants us in asking for legislation on this subject.

For the protection of the public and the employee the Traction Companies require all employees to take at least two weeks special training under the care and direction of a competent motorman, before he is privileged to operate a street car. The teamster is placed in charge of a horse and wagon, the chauffeur is placed in charge of an automobile, or a large truck, which are now becoming very numerous, without being required to pass an examination. The chauffeur's license is secured by the employer, who furnishes the same to the employee. It is quite evident to every one familiar with this class of employment that numerous accidents are occuring daily in which drivers and chauffeurs are killed and injured, and many instances occur in which the public are killed and mangled by these vehicles. A large percentage of these accidents is due to the employment of incompetent and inexperienced drivers. Our public thoroughfares and street crossings are more dangerous than grade railroad crossings, upon which so much money is being expended for their elimination. The speed craze in recent years has become a great menace to every person using our thoroughfares; accidents are increasing to an alarming extent.

Act No. 267, creating the Department of Labor and Industry, provides in section 14, that "All rooms, buildings, and places in this Commonwealth, where labor is employed, or shall hereafter be employed, shall be constructed, equipped and arranged, operated and conducted, in all respects, so as to provide reasonable and adequate protection for the life, health, safety, and morals of all persons employed therein." The same section, as well as sections 15 and 16, provides for an Industrial Board, and empowers it to make, alter, and repeal general rules and regulations necessary to enforce the provisions of section 14.

We suggest that laws, rules and regulations be put into effect in this State, laws similar to those in effect in other states, which will provide that teamsters, drivers of vehicles, chauffeurs, and truck drivers be required to pass an examination and that a license be required to furnish proof that they have had two or four weeks practical experience and training with a person holding a license or certificate of competency.

Let me further recommend that the law require employers to keep their stables in a safe and sanitary condition, that the latter be adequately lighted, as many instances occur when drivers and other employees about stables are injured in caring for the horses in the darkness. Employers should also be required to furnish storm covers, wind shields, blankets, and other necessary equipment for the drivers and horses to protect them from the inclement weather.

I would further recommend that no person be licensed or given a certificate of competency to drive any vehicle, unless he is 18 years of age, or over.

Mr. A. R. JERLING:

The fourth recommendation "Better sanitary conditions in Barber Shops, for the employees therein, and also for the convenience of the general public, and that a license law, such as is being enacted in other states, be passed at the coming session of the Legislature," will now be presented to you by Mr. O. L. Overcashier.

BETTER SANITARY CONDITIONS IN BARBER SHOPS.

O. L. Overcashier, Financial Secretary Local No. 20, Journeymen Barbers' International Union, Pittsburgh.

We wish to bring to your notice, that the barbers are laboring under great hardships in their work, owing to the locations and condition of some of the shops. Because of these conditions, we offer the following recommendations:

1st. That no barber shop be permitted to be opened in a new location, unless the room has first been inspected by the inspectors of the Department of Labor and Industry.

2nd. That no cellar shop be permitted, unless direct outside air can be had from windows of sufficient size.

3rd. That there shall be no overhead heating system that would be directly over the heads of the workmen.

4th. That there shall be no open gas stoves without flue connection.

5th. That there shall be no gas lights permitted in cellar and basement shops.

6th. Where cellar shops are now in use, workmen should not be permitted to work more than 8 hours in 24 hours, and then only when the shops are properly ventilated.

7th. Every shop must have running hot and cold water at all times and all plumbing must be inspected once each year and if found in bad condition, the owner is to have 24 hours notice, to make repairs on same within 48 hours.

8th. No water cans of any kind are to be allowed on stoves in any barber shop.

9th. Clean, fresh laundered linen must be used for each patron.

10th. Clean sterilized hair brushes and combs must be used for each patron. Sponges are absolutely prohibited for patrons of barber shops.

11th. All receptacles used as cuspidors must be cleaned after each day's work and not allowed to stand over night.

12th. No one is to be allowed to be employed in a barber shop under the age of 16 years.

We would also suggest that an Act be recommended to regulate the barber craft with a properly drawn License Act, such as can be found in the states of Michigan, Indiana, Illinois, Wisconsin, Colorado, California, New Jersey and others.

Mr. A. R. JERLING:

The fifth recommendation is "The manufacture of clothing in this State is largely carried on in the homes of the individual workers. The danger of contagious diseases is obvious. It is, therefore, suggested that proper legislation be enacted to abolish what is known as home-work." There is no paper on this subject, so we shall pass on to the next.

The sixth recommendation is "That the recommendations made by the Industrial Board, at the hearing in Pittsburgh, regarding the Baking Industry, are heartily endorsed, and recommended for adoption." There is also no paper on this subject.

The seventh recommendation is plainly stated and easily understood: "We make the following recommendations for adoption by Trolley Companies in this State: The use of the automatic, instead of the link coupling, now frequently used and dangerous to the employees; the air-brake to be the standard of the State, instead of the hand-brake; that vehicles using the public highways between sunset and sunrise be required to display lights that can be observed from the front, back and sides; the use of vestibules on summer cars, as well as the abolition of outside running-boards on these cars."

(The Proceedings will be continued in the September Bulletin.)

Vol. 2 No. 9

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

SEPTEMBER, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Feehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

The Attorney of the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of F. S. Riddle, Editor.

TABLE OF CONTENTS

GROUP INSURANCE.

BY WILLIAM A. DAY,
President, Equitable Life Assurance Society.

Group Insurance is a product of the economic and social tendencies of the times towards just relations between employer and employed. It has the double function of protecting families of the employed and of rewarding efficient, faithful service. The recognition of this outstanding necessity to the employees' welfare marks a departure in business relations. Group Insurance is perhaps the widest and most general application of life insurance to social needs.

The aim and the field of Group Insurance have been well set forth in an editorial of the Saturday Evening Post, which included the following:

> "Life insurance ought to be universal. No married man who has not a fortune has any business to be without it. We should like this group-risk plan elaborated until life insurance and pay check go together."

Briefly stated, Group Insurance is an Employer-Employee Mutual Benefit arrangement. Where conditions permit, all the employees of one employer, constituting an eligible group, are insured without individual medical examination. One blanket policy is issued to the employer, and an attractive individual certificate is issued to each employee, bearing his name and that of his beneficiary, and stating that he is insured for a specified sum. The certificates usually give expression to the good will and interest which the insurance evidences. Ordinarily, the amount of insurance is one year's salary with a maximum of $3,000 to any individual. Any employee receiving annual remuneration in excess of that sum would receive up to $3,000 insurance. The premiums are paid monthly by the employer, and the insurance is payable to the beneficiary named by the employee.

The operation of the plan is simple. New employees are automatically included upon passing a simple health test, and the insurance by the employer on outgoing employees automatically ceases upon termination of service. If desired by the employer, the Equitable will agree to settle the insurance benefits in twelve monthly payments. Group Insurance thus takes on the form of a continuance of the pay check for a full year in the event of death while in service; during

which time the employee's dependents would have opportunity to adjust themselves to the changed conditions arising out of the death of the breadwinner.

From the employer's standpoint, Group Insurance is the one way by which he can make sure that every man and woman in his employ is covered by life insurance. Employers rightly regard it as an effective welfare measure and an opportunity to prove in good faith, their interest in those who collectively assure the success of their enterprises. For many years, and increasingly of late, employers have turned to pensions, cash bonuses, profit-sharing plans and similar excellent ideas, but they have lacked a comprehensive scheme to insure the lives of their employees. Insurance against the consequences of the day when the hand of the breadwinner is stilled, is the first form of welfare work which the individual provides for his family, and yet until Group Insurance was introduced by the Equitable, it has been the last form of welfare work that life insurance has offered the employer for the collective necessities of his extensive business family.

Employers who have applied the Group plan of life insurance for the protection of their workmen give it high commendation. One large manufacturer says:

"There have been several instances to our knowledge where beneficiaries under the Group plan, who had practically no savings, were supported and kept from great distress by means of it. I have always believed that this great problem must be met more by the voluntary act of the employer than through the compulsion of legislation, and that it would create a far more beneficial result in the attitude of labor toward capital if employers generally should extend these benefits voluntarily without waiting for compulsory legislation. We can, therefore, most heartily recommend this system of insurance to the employers generally as the result of our own practical experience of its benefits."

The head of several financial institutions in another large city says:

"What astonishes me is that this character of insurance is not more thoroughly exploited and that employers are not more generally urged to purchase the same for the protection of their employees. I believe if 10 per cent of the amount spent by organized charities in St. Louis were used systematically for a period of ten years buying life insurance, thus aiding the poor that they are now trying to relieve, the charity organizations would have much less work to do at the end of ten years and thousands would be benefited and made happier on account of the insurance."

The sentiments expressed by these two employers are representative of those entertained by the entire list of group patrons.

The employer who protects his employees with Group Insurance assists materially in spreading life insurance education among wage earners. It is obvious that a person so protected, having been subjected to this educational influence and familiarized and impressed with the value and benefits of life insurance, would be more prone to take out an individual policy than he would be without such experience.

Now where does the employer benefit? The answer must come from the service which Group Insurance renders and the spirit of good will that prompts its giving. The employee judges in the end, and the verdict is usually in accord with the facts. The employer who feels that it pays to have the good will of the employee will find ways and means of earning it. Group Insurance can assist in the important work of protecting the home against some of the losses occasioned by death and as such it is a medium for demonstrating the employer's constructive interest in the employee, and in the employee's family.

STATEMENT OF ALL ACCIDENTS REPORTED DURING AUGUST, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.	
Nursery,	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....
Engineering,	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....
Building Trades,	3	9	11	9	7	4	9	3	3	46	....	....	....	52
Chemicals,	8	36	22	26	19	20	18	7	3	139	....	....	....	149
Clay—Glass,	5	11	9	19	10	18	8	1	4	75	....	....	....	80
Clothing,	....	....	1	....	2	....	....	....	....	3	....	....	....	3
Food,	2	3	2	3	7	8	4	....	2	27	....	....	....	29
Leather,	....	3	6	6	10	2	1	....	....	28	....	....	....	28
Liquers,	....	3	1	3	....	1	....	....	....	8	....	....	....	8
Lumber,	....	3	3	3	5	3	1	....	1	17	....	....	....	18
Paper,	....	6	5	5	2	6	5	....	1	28	....	....	....	29
Printing,	....	....	....	2	....	1	....	....	....	3	....	....	....	3
Textiles,	....	8	8	10	5	6	5	1	2	39	....	....	....	42
Miscellaneous,	....	6	1	2	12	13	8	....	1	41	....	....	....	42
Laundries,	....	1	....	....	....	....	1	....	....	2	....	....	....	2
Metals,	84	391	419	393	450	436	290	13	82	2,368	....	....	....	2,463
Mines,	24	199	190	264	193	183	186	56	83	1,039	....	1	....	1,179
Public Service,	46	244	221	235	265	258	186	3	65	1,386	....	1	....	1,455
Tobacco,	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....
Unclassified,	....	....	....	2	2	2	....	....	....	6	....	....	....	6
Total,	172	923	899	922	989	961	722	84	247	5,255	....	2	....	5,588

BUREAU OF EMPLOYMENT OF DEPARTMENT OF LABOR AND INDUSTRY.

ORGANIZATION.

At the last session of the General Assembly Act No. 373 was passed authorizing the creation of a Bureau of Employment under the Department of Labor and Industry. When funds and facilities permit, this Bureau will be organized in at least eight divisions. These divisions in the order in which it is desirable that they be created are as follows: (1) organization and administration; (2) labor exchanges; (3) publicity; (4) private employment agencies; (5) complaints and conciliation; (6) standardization; (7) immigration; (8) law enforcement. This represents the ultimate organization of the Bureau toward which all preliminary organization will be directed during the first two years.

It is indispensable that the central office be organized quite fully before any attempt is made to establish branch offices. The efficiency of a system of labor exchanges depends fundamentally upon the central clearing-house, for this office alone can arrange for cooperation with outside agencies and between district branch offices. After the creation of a division of organization and administration and a division of labor exchanges, it is immediately important that a division of publicity be created. Without advertisement and publicity, no labor exchange can be effective. The remaining divisions may be created as expediency may require and in an order different from that suggested in the above enumeration.

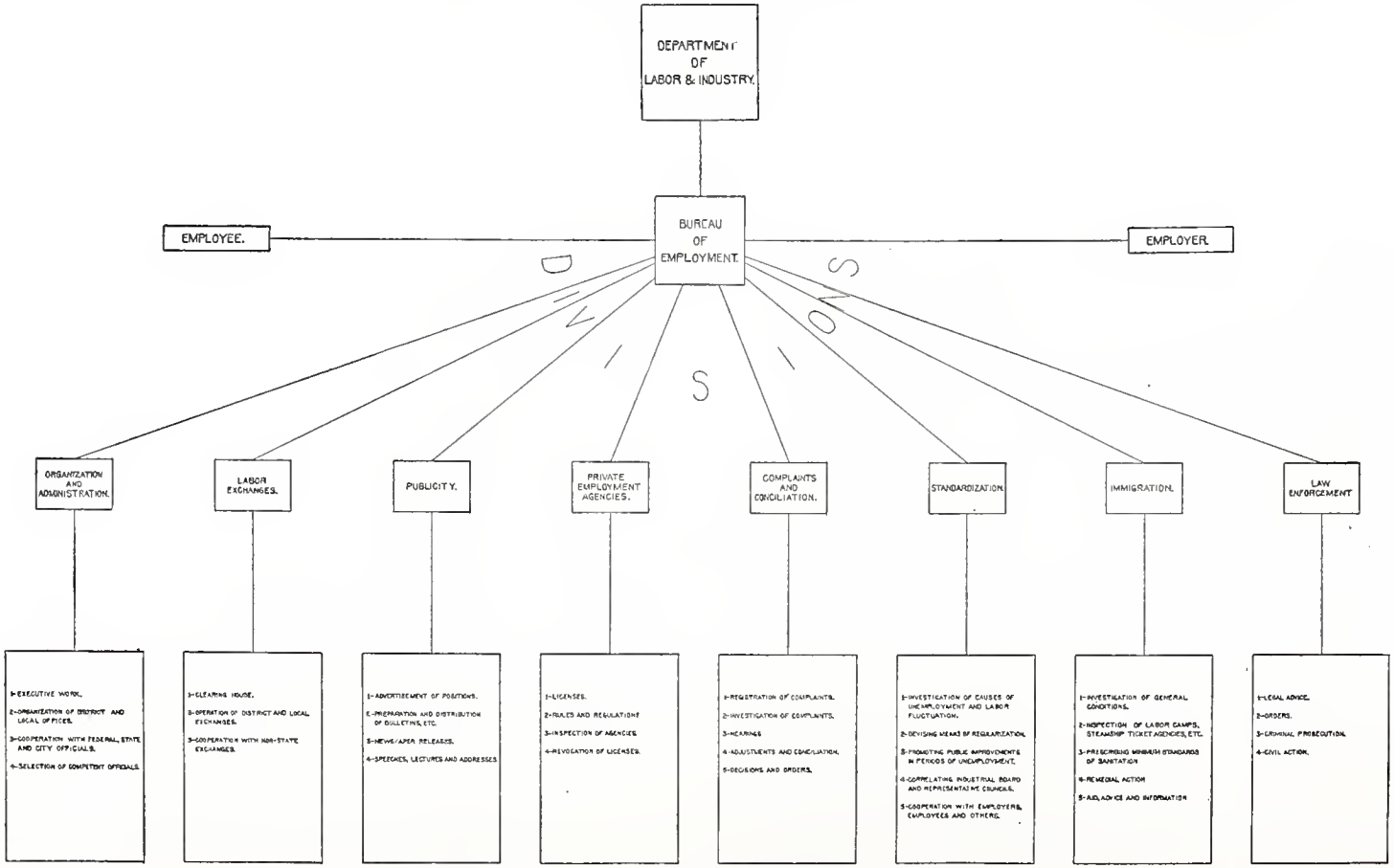
In the beginning, of course, it will be impossible to place a different official in charge of each division. This, however, is not necessary, but it is important that the work of the bureau be clearly defined and separated, or otherwise there will be a constant duplication of effort and a failure on the part of bureau officials and the public to comprehend the various activities of the bureau. From the standpoint of convenience alone, an adequate division of activities is extremely desirable. It will also be found that by having these divisions it is easier to make competent reports of the bureau's activities.

A. DIVISION OF ORGANIZATION AND ADMINISTRATION.

This division will be organized first and be located in Harrisburg. In scope its work will cover:

(1) All executive work of the entire bureau and branches.

(2) Organization of district branch offices and local free public employment offices.



Organization Plan of the Bureau of Employment.

(3) Arrangements for co-operation between the Federal Bureau of Immigration (Division of Information), State Bureaus, city officials, and district branch offices,—an extremely important function.

(4) The selection of competent and trustworthy employees and subordinate officials.

This division will be under the immediate charge and supervision of the director and consulting expert. Its general functions shall be to co-ordinate and correlate all the activities of the bureau and of each division into a comprehensive and intelligent working unit.

B. DIVISION OF LABOR EXCHANGES.

The second division of the bureau will come into existence immediately upon the establishment of a district branch office in Philadelphia, Pittsburgh, Scranton or Erie. Its functions should be as follows:

(1) Establishment of a clearing-house between all the district branch offices and local free public employment offices in the central office at Harrisburg. Until a clearing-house is created and equipped, no district branch exchanges ought to be organized.

(2) The actual operation of district branch labor exchanges and local employment offices.

(3) Co-operation—actual, emergency and otherwise—with federal, city and philanthropic free bureaus.

The chief function of this division is to bring employers and working people into communication, i. e., to receive and file applications for help or employment, to fill these applications by placing men in positions and distributing the working force of the state. In carrying out this function, the division has little to do with the division of standardization.

C. DIVISION OF PUBLICITY.

The prime purpose of this division is to keep the various activities of the bureau constantly before the public. It should attend to:

(1) The advertisement of applications for positions and help reported by the division of labor exchanges.

(2) The preparation and dissemination of bulletins, reports and circulars concerning the activities of the entire bureau and calling attention to its facilities.

(3) The preparation of newspaper releases from time to time.

D. DIVISION OF PRIVATE EMPLOYMENT AGENCIES.

The functions of this division should be as follows:

(1) Licensing of all private employment agents, padroni, labor contractors, and others engaged in the business of supplying employment or help for profit.
(2) Prescribing rules and regulations for those engaged in employment business.
(3) Inspection of all agencies engaged in business for profit.
(4) Revocation of licenses for violation of law or misdemeanors.

E. DIVISION OF COMPLAINTS AND CONCILIATION.

The complaint work of the bureau is comprehensive in that it covers not only the complaints of aliens but of native-born working people. It is mandatory upon the Department to receive complaints of all kinds and to investigate them without discrimination. The work of the division should be divided under the following headings.

(1) Reception and registration of complaints.
(2) Investigation of complaints.
(3) Hearings after investigation where necessary.
(4) Adjustments and conciliation.
(5) Decisions and orders based upon competent evidence.

In other words, the function of the division of complaints and conciliation is to act as an intermediary between disputants and as an informal court, where difficulties between employers and employees and aliens may be threshed out and determined to the satisfaction of all parties concerned.

F. DIVISION OF STANDARDIZATION.

The duties and functions of this division will be derived from sections, 6, 12, 13 and 14 of Act No. 373, providing for special powers and duties of the Industrial Board, and the appointment, organization and duties of representative councils. The work of the division may be summarized as follows.

(1) Investigation of causes of unemployment and labor fluctuation generally and in individual plants.
(2) Devising means and methods of regularizing employment.
(3) Promotion of public improvements in periods of unemployment.

(4) Correlation of work of Industrial Board and representative councils.
(5) Co-operation with employers, employees and others.

G. DIVISION OF IMMIGRATION.

The authority of this division will be derived from Act No. 373, of the Laws of 1915, pertaining to the regulation of private employment agencies and the investigation of immigrant conditions. The scope of its activities should be as follows:

(1) Investigation of general industrial, social and educational welfare and conditions of aliens.
(2) Investigation and inspection of immigrant lodging places, labor camps, steamship ticket offices and all other kinds of business coming in contact with the immigrant.
(3) Prescribing of minimum standards of sanitation for labor camps, housing accommodations for employees and aliens, and temporary quarters for shelter and care of aliens and unemployed persons.
(4) Direct remedial action and co-operation with agencies possessing requisite jurisdiction to secure alteration of conditions.
(5) Provision of general aid, advice and information through personal contact and dissemination of informational folders, guidebooks, etc., in foreign languages.

H. DIVISION OF LAW ENFORCEMENT.

This division might be united with the division of complaints and conciliation, but inasmuch as many complaints can be handled without legal assistance and can be adjusted without criminal prosecution or civil action, a separate division should be created to handle those causes where legal action is necessary. The work of this division would include:

(1) Legal advice to complaints and applicants.
(2) Orders to violators of law.
(3) Criminal prosecutions.
(4) Civil action by referring cases to legal aid bureau, etc., where division of complaints cannot adjust.

SAFE EMERGENCY EXITS FOR AUDIENCES.

In spite of the fact that emergency exits should be of the very safest construction, and should be given as much or more attention, in this respect, than the regular exits, it has been the tendency of those who own public halls, theatres, offices, factories, etc., to spend as little thought and money on emergency exits as possible.

There are many cases where these exits are not correctly constructed, rarely because of deliberate intention to save money at the risk of human life but more frequently from ignorance of the possibilities of danger.

This last reason for a poorly constructed exit is seen in the following case. One of the Inspectors of the Department of Labor and Industry found two exit doors in a theatre leading, respectively, from the balcony and gallery. They led on the outside into space; no external stairs having been provided; the distance to the ground was about forty feet.

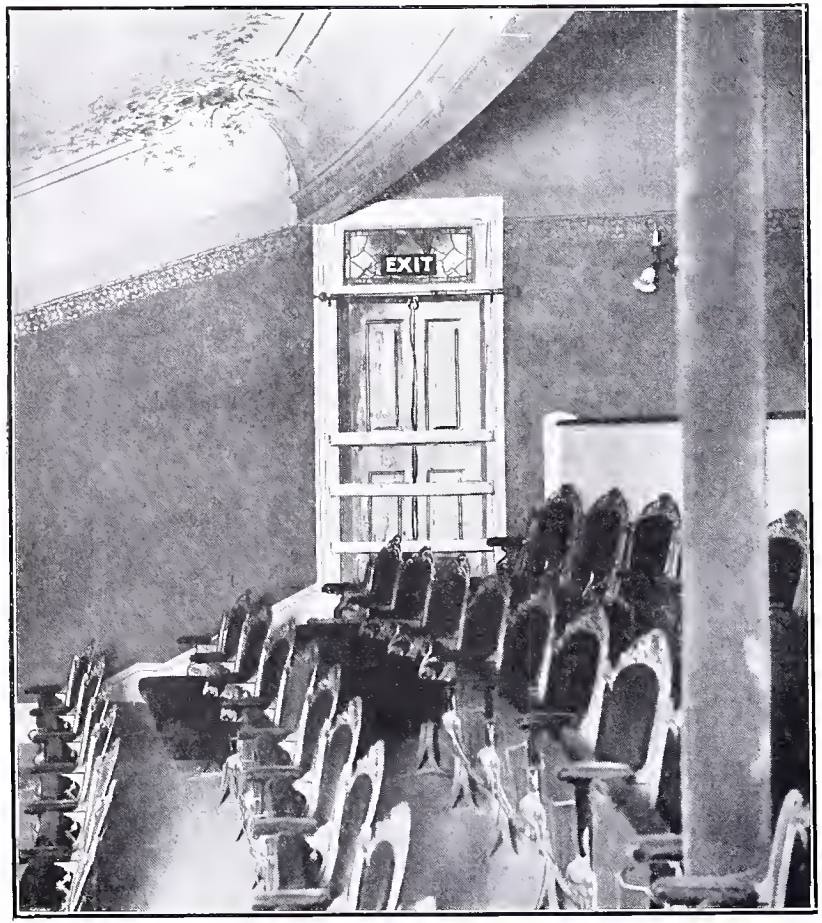
These doors were meant for additional safety exits, there already being what the Department considered sufficient means of egress. But instead of being an additional provision for safety as was supposed by those arranging them, they were actually a menace.

The doorways had several slats nailed across them and the doors were locked; also a rope was provided, fastened to a hook in the top of the doorway which could be used for a person to slide to the ground.

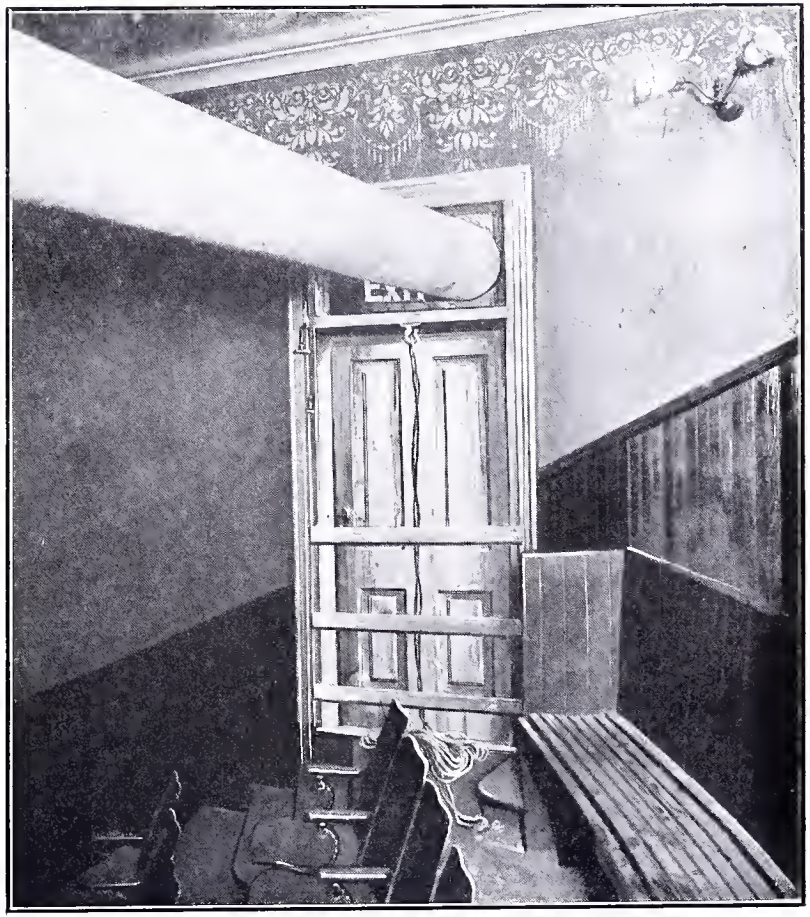
To a panic-stricken crowd, however, these doors might have served as the attracting exits instead of the really safe exits located in another direction. A crowding into these doorways and forcing the doors open would mean serious injury and even death from falling through the opening to the ground.

Any appearance of an exit that is really not a secure means of egress, is extremely dangerous. All doorways or other openings at any distance from the ground, and not provided with the regular means of descent, should be securely sealed up. An instance has recently been cited of a man seriously injured and his wife killed, from walking from a second story doorway that was not sealed but opened into space. The intention had been to build a porch to which this door should lead. In the meantime, this door was not securely nailed or boarded shut, but opened as any other door would open to lead upon a safe flooring beyond it.

The accompanying illustrations show the conditions described in the theatre, and clearly depict the danger in the attracting sign "Exit" appearing over each door.



INTERIOR VIEW.
Exit Door on Balcony.



INTERIOR VIEW.
Exit Door on Gallery.

Exterior View of Exit Doors on Balcony (left) and on Gallery (right). (See article Safe Emergency Exits for Audiences.)

Plate 1. A sign for use in places where inflammable or explosive materials are manufactured, used or stored.

VALUE OF SIGNS IN ACCIDENT PREVENTION.*

The question is often raised as to whether signs are efficient agents in accident prevention work. It has been stated on many occasions that signs are not of very much value but it is now believed that this opinion is erroneous. There has been an increase in demand for signs in this kind of work and the writer has found that most people who have been asked concerning this question of their value, state that they believe signs are a good thing.

The great mistake made in their use is that frequently after they have been installed, no more attention is paid to them and their usefulness is soon over, on account of the fact that dust and dirt is allowed to accumulate on them and obscure their legibility. Managements are apt to believe that after they have once installed signs, no more care need be given them. This same attitude is frequently taken in regard to fire fighting apparatus which is installed and then given no further attention. In a year or two after the installation, if a fire occurs, it may be found useless.

The fact that signs usually cost considerable money and also that there is some expense in placing them in proper position, should justify a further small expense of keeping them in good serviceable condition. Otherwise, the initial cost is a complete loss.

Another reason for the frequent failure of safety signs to attract thoughtful attention, is that they have not been selected with good judgment. The purpose for which a sign is installed should be carefully studied, and serious thought should be given to the desirability of various kinds of wording and also to the variety of colors used. It is evident that the colors chosen for a sign in a cement plant would necessarily be of different character from those used in an industry where there was no appreciable amount of dust. In the same way, it might be advisable to use an electrically lighted sign in a location where a plain printed sign would probably not create any impression whatever, or vice versa.

Then, as stated before, the care of signs after they have once been installed, plays a very important part in their usefulness. If the nature of the industry or establishment where they are used demands it, they should be cleaned at very frequent intervals. In other places where there is not so much danger of their being covered with dirt and dust, the cleaning can be done at more infrequent intervals. It is suggested that the cleaning be a part of the duties of those who take charge of the safety work.

*The cuts used to illustrate this article were loaned by the Enamaled Steel Sign Co., Chicago, Ill.

It seems desirable to point out a few special cases where signs calling attention to particular features are necessary, and therefore the following will be mentioned:

Many accidents and much loss of life have resulted recently in this State from accidents occurring only from carelessness in handling explosive and inflammable materials. The great danger in having this kind of material around any establishment is due to the fact that "familiarity breeds contempt" and persons after handling it for some time, grow careless. In many other cases, persons who are not accustomed to being around this material or do not handle it regularly, are called upon to go to the vicinity where it is kept. As they do not know the danger connected with these places, they are likely to carry lighted cigars or matches or may in some other way, all unconsciously, run great risk of injury from an explosion. Accordingly, the use of signs which call their attention to the danger and which suggest certain precautions as, for instance, "Do Not Have Any Fire, Matches, or Open Fire Near Here," or "Smoking Prohibited," etc., may be the means of instilling the necessary precautions for safety. (Plate I).

In some establishments where various kinds of inflammable material are used, the storeroom is usually located in a building used only for that purpose or in a compartment especially partitioned off. It has been found advisable to place signs on the doors leading to these storerooms, calling attention to the danger of carrying lighted fire into the room. These signs would necessarily recall the danger of these places to all who enter. The plan might be carried further by enclosing with partitions all dangerous portions of plants where such material is used and placing signs on all doors which lead into these spaces.

The necessity for signs around machinery is also very apparent, when it is considered how many accidents have been caused from the fact that employees frequently forget the danger that is always present. Employees frequently attempt to oil machinery while it is in motion, although this is a prohibited practice in most shops. The rule against it is very often disobeyed simply because it is forgotten at the moment. If, however, a sign is arranged so as to recall this rule to their minds, whenever an attempt is made to oil machinery, the sign should result in saving from danger those who have unconsciously disobeyed the rules in the past. Willful offenders, of course, can never be reached in that way, Summary discipline for those persons is the only remedy.

Where it is found that caution signs have apparently no effect, it might be advisable to use signs which suggest indirectly the

NOTICE
DO NOT OPERATE
MACHINES WITHOUT GUARDS
NOTIFY FOREMAN

NOTICE
DO NOT OIL OR CLEAN
MACHINERY WHILE IN MOTION

NOTICE
NOTIFY FOREMAN BEFORE WORKING
ON SHAFTING PULLEYS OR BELTS
WHILE ENGINE IS STOPPED

Plate 2. Signs for use around machines.

thought which it is desired to convey to the mind of the reader. This may be illustrated by the sign which was seen in a small hotel in the South. Instead of having the customary: "Do not spit on the floor" sign hanging on the wall, they substituted a sign bearing the following inscription: "If you spit on the floor at home, do so here. We want you to feel at home." It is said that those reading this sign never failed to look for the cuspidor.

Many accidents resulting in injury to the eye are happening daily in the industries of this country. All progressive plants have taken up this problem and are making it compulsory for the employees to wear goggles, whenever their work is of such a character that it may result in injury to the eye. Very often, however, employees will thoughtlessly go to a grinding wheel or engage in some type of chipping without thinking of putting on the goggles which have been provided for that purpose. A suitable sign (see Plate 3) which would remind them of this rule would be a good thing if it were placed in such a position around the machines of this character that employees starting to use the machine must of necessity see such a sign that would urge them to wear goggles during this period.

In buildings or other places where it is customary for persons to gather daily, who have no intimate knowledge of the way by which they could reach the street quickly without interference, it is advisable to have suitable signs showing the location of exits. This applies particularly to places of amusement and hotels and lodging houses. In the past many lives have been lost through fires in buildings of this character, due to the fact that people have been confused and have not known the best way of leaving the building quickly. This has been true especially in the case of fires which have occurred during the night time in hotels. The guests rudely awakened out of sound sleep, are in a confused state of mind and not seeing signs which would make an impression on their stupefied minds, they rush madly about. In some cases, an illuminated sign which would be lighted all night, would be a very effective way of calling the attention of such people to a safe means of escape. Several cuts of signs of this nature are reproduced herewith.

In this day of advancement in electricity, there are large numbers of high tension wires located in almost every community. Stray currents from such wires, if they are insufficiently insulated, sometimes make all poles or carriers to which they are attached, dangerous for any person who would attempt to touch them. The danger or warning signs at such places would not only be desirable but should be placed there as a proper protection to the public who might be unconscious of danger.

Of course, many other specific points and places might be mentioned where the use of signs would be desirable, but it is thought that

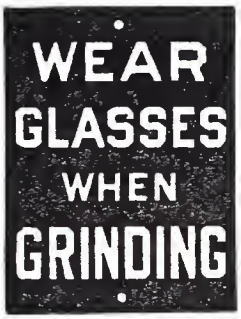
this brief selection will be sufficient to point out the advantage and usefulness of signs in such cases. It is not the purpose here to enter into discussion of the merits or demerits of the different materials used in the manufacture of signs. At the present time, we have electrically lighted signs, steel enameled signs, pressed or stamped metal signs and ordinary printed signs. In some cases where a change of signs is needed at short intervals, the printed sign might be most desirable, but it is generally conceded that the sign of lasting or permanent character is the best.

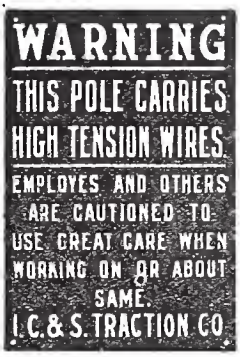
The principal though, however, which is wished to be conveyed by this article, to the reader, is the fact that the usefulness of signs in accident prevention work depends especially upon the care and judgment with which they are selected as also upon the attention which is given them during their period of usefulness. The plan of selecting haphazardly the most available sign, is a method that should be discouraged. If the necessity for a sign is great enough to warrant the purchase of it, then its usefulness should not be imperiled by the lack of care and judgment in selecting it. This fact should be given careful consideration since the entire question as to whether or not a sign will be effective depends upon this careful selection. If these facts are given due consideration, it is believed that signs will prove themselves not only indispensable but also one of the most potent factors in the success of the Safety Movement.

THE SAFETY MOVEMENT.

Great movements have small beginnings. Any worthy cause is first taken up quietly and slowly, but as its advocates are usually earnest in their efforts, results soon become apparent. It is at this point that the public begins to take notice and if the movement is one that appeals to the popular mind, everybody starts to work along the same lines, with a keen interest. It sometimes happens, however, that the interest is only superficial—the idea being to imitate something worth while rather than to do it for its own sake. Such has been the history of the Safety Movement.

The purpose of this article is to call attention to the danger of attributing the poor results of poorly conducted campaigns, to the supposition that the safety movement is all a fad and that it is not a paying proposition. The comment, here, is intended to point out defects that have been noted in several campaigns which have come to the writer's attention.





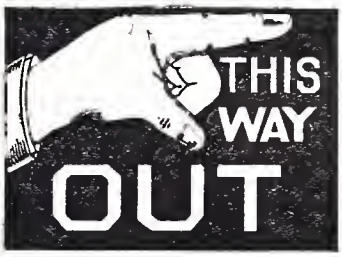


Plate 3. Goggle, electric danger and exit signs.

The first consideration in establishing a safety campaign for any industry, whether it be large or small, is whether safety shall be subservient to other policies or if all other policies such as speed, cost, etc., shall be subservient to safety. Most managements where the latter view is taken, have made a success of the movement but those where the safety policy is given consideration after everything else, have unfortunately not very encouraging reports to give of their safety endeavors. Each establishment depends for its success on the work of its employees. Their health and safety then should be the foundation on which all other policies are founded.

In a certain shop of a company which has now taken up the safety movement with renewed vigor, orders had always been given to the workmen to do things in the safe way and not to use unsafe tools. Apparently this was well meant but if any employee reported any unsafe practice or any defective tool, he was told "all right, it will be attended to." If the tool happened to be a defective jack, he was not given another one but might have to wait for days before the defective one was repaired. Naturally as he was working on piece work and wanted to get the job finished, he tried to fix the jack temporarily or may have even "taken a chance."

Such a system of verbal reports on bad conditions and promises of repair are useless. If an accident should occur from the use of such a defective tool, no responsibility could be attached to any one, as all would disclaim responsibility.

A system which is admirable in every respect, has been in use for some time by a corporation in the western part of this State. The plan is to have every workman who discovers an unsafe place or a defective tool, tag the same with a danger sign and that place must be avoided or that tool left unused, until it is repaired or put into first class condition. The danger card is then removed by some one in authority after he has inspected the repairs. This inspector thus assumes the responsibility for its condition. This system has given excellent results.

In the first shop mentioned above it used to be common to find floor boards torn up or in unsafe condition. They might remain that way for a considerable time. Accidents used to occur. Now, however, such a condition remains only as long as it takes for instructions to be sent for carpenters to come over and fix it. Pits which formerly were unguarded, have now substantial railings. In other words, the safety proposition has now been given the first place and the movement is genuine. The workmen are now "catching the spirit" too. and say that whenever unsafe places or material are reported they are given prompt attention.

Accordingly, it is advised that suitable printed forms be furnished to employees in all establishments, whereon they may make reports of unsafe conditions and defective tools and that orders be given that such conditions be immediately attended to and that employees are forbidden to use tools thus reported. This procedure will undoubtedly tend to change half-hearted safety movements to wholehearted and sincere ones.

In conclusion then it may be said, that success will not attend campaigns for safety unless they are entered into wholeheartedly, and the slogan adopted by employers and officials alike should be "Safety is Paramount."

WASTE PACKING MATERIAL.

Inspections in various mercantile and manufacturing establishments, during the past year, by officials of the Department of Labor and Industry, have revealed in many cases apparent indifference to the fact that waste packing material should be disposed of daily and not be allowed to accumulate.

Too often, even if the danger is thoroughly appreciated, the proprietors give no thought to the matter but leave it in the hands of subordinates who do not realize the danger. These latter frequently pile inflammable waste material such as excelsior, boards, waste paper, etc., in large quantities in a place close at hand, without definite provisions having been made for its prompt and regular removal and the enforcement of the same. These convenient storage places are often located in basements where a half extinguished match, cigarette, or cigar end might be carelessly thrown. Often these piles of waste material are found in close proximity to heating stoves or furnaces or else might be in danger of ignition from defective electric wiring.

A waste pile of inflammable material may not only be a fertile place for spontaneous combustion to occur if greasy or oily waste, rags or paper are present, but it also serves as a place where a fire might obtain a quick start.

The Department of Labor and Industry accordingly recommends that waste material of any description should be removed daily from all establishments. The paper baler solves the problem of getting rid of waste paper and turns a waste product into a source of revenue.

PROCEEDINGS OF SECOND ANNUAL CONFERENCE ON WELFARE AND EFFICIENCY

Thursday, November 19th, 1914.

(Continued from August, 1915 Bulletin)

WELFARE SECTION.

November 19th, 1914, 9:00 o'clock A. M.

DR. JOHN C. PRICE, ACTING CHAIRMAN.

The Chairman: The first paper of the morning is to be read by Dr. Samuel G. Dixon, Pennsylvania Commissioner of Health. The Department of Health has made this State one of the most healthful states in the Union. The mortality from typhoid fever is almost negligible, because the conditions of water, milk and food supply are the standard throughout the United States. The last session of the Legislature passed a general State Housing Bill to operate as a part of this Department and Dr. Dixon has consented to outline his plans for this work.

HOUSING CONDITIONS.

DR. SAMUEL G. DIXON, PENNSYLVANIA COMMISSIONER OF HEALTH.

In the year, 1905, an Act creating the Department of Health was passed. Besides the specific clauses of this Act, the following duties were imposed:

To protect the health of the people of the State, and to determine and employ the most efficient and practical means for the prevention and suppression of disease; to examine nuisances or questions affecting the security of life and health in any locality, and for that purpose to enter, examine and survey all places within the State; to order nuisances, detrimental to the public health, or the causes of disease and mortality, to be abated and removed, and to enforce quarantine regulations; and enter upon the premises and abate or remove nuisances; if the owner or occupant fails to comply with any order for the abatement or removal thereof, the expense to be a lien upon the lands.

This Act was framed to place health work under scientific supervision.

The locating of buildings in relation to our streams, regardless of the topography and the geographical formation, has made proper housing a hard problem. Owing to the fact that the first power used for manufacturing was water, the mills and homes for those working in the industrial plants were built close to the streams. Some were on clay formations and almost on a level with the streams, so that the disposal of sewage was a difficult task. The people, therefore, followed the way of the least resistance and discharged the sewage into streams. The population increased and modern conveniences were introduced, until the volume of sewage was so large that the disposal of it became an economic problem, so great that the people suffered death from typhoid fever before they would spend their energies and money to overcome it. When building any sort of structure, the first thing to consider is the site and its relation to a water supply and the proper disposal of the sewage.

We had 3,917 deaths a year from typhoid fever which has now been cut down 70 per cent. and will go to almost nothing. Taking the raw death dealing sewage out of the streams has gone slowly, because it was impossible to do so until the people were educated.

In the session in which the Department of Health was created, the Assembly also passed the law creating the Bureau of Vital and Morbidity Statistics. By the work of this Bureau, we learned for the first time how many were dying every year and what they were dying of. The facts collected told us what typhoid fever was doing, and where and why. With such facts we know how to fight this disease. We learned through this Bureau how many children were being taken from us by diphtheria, and with this horrible death roll before us, the State wakened up and established 671 stations for the distribution of antitoxin for the cure and prevention of diphtheria, through which the poor all over the Commonwealth can obtain this great remedy for nothing. From these 671 forts containing ammunition to fight diphtheria, 176,572 packages of antitoxin have been given out. With the use of antitoxin for diphtheria, the deaths have been reduced 90 per cent. There are no words in the English language to express the amount of sorrow and suffering this one agent has saved.

Then we are working to save the babies. The health work to save the babies has received the approval of every mother in the State.

Then another great work came under our care. This was three magnificent sanatoria for consumptives—one in the west, one in the south centre, and one in the east—and with these, 115 dispensaries. Under the succession of Acts appropriating money for this work we

have a system which is treating and looking after 10,000 tuberculous persons, and giving us an insight into housing conditions.

The School Code was enacted in 1911, giving the Department an opportunity to make medical examinations in the schools and advise parents what could be done to make their children healthy. This Code also gave us a specific power over the school buildings.

In the year 1913, a most creditable bill was prepared, giving the Department more specific powers over housing conditions in the State. This legislation did not include an appropriation, but was so framed that the work could be done by the Department under its general appropriation. Realizing the importance of the work and its close relationship to work already organized, some of our less urgent field work was cut out that we might have money to enable this Bureau to work.

The present Engineering Division looks after the water supply and the disposal of sewage while the work being done by the nurses relieves the inspectors of some of the inspections they otherwise would have to perform. This Division works in harmony with the county medical officers who visit all the houses in the townships and many of the municipalities where communicable diseases occur. The traveling exhibit can do the teaching and can demonstrate by models and pictures, different devices for ventilation, etc.

Housing conditions must have a broad definition. We must follow each person through the entire day; when he sleeps; when he eats, observing the kind of food he consumes; when he plays; when he is taught; when he worships; when he works, and even in the hospitals.

The subject of domestic water supplies is one of grave importance and is growing more difficult each day. This question is taken care of by the Engineering Division, and need not be considered in the housing work.

The visiting nurses have taught thousands the necessity of cleanliness of person and home. They have instructed them about ventilation and heating, outdoor sleeping rooms and the like. The families taught have gone out as missionaries, and this work has been supplemented by newspaper articles and bulletins.

The nurses teach what kind of food should be eaten that the demand of nature be satisfied. People, half starved because of their ignorance as to what kind of food to eat, will not properly ventilate their homes, as they cannot resist the cold. People of all sorts must be taught the necessity of fresh air and sunlight.

Our Bureau rules and regulations provide for the admission of fresh air into all direct steam and hot water heated rooms, for such

heat given off in tightly closed rooms is a great coal saver but a death trap. The gases escaping from our coal fires are poisonous. One per cent of that odorless gas will kill a horse in two minutes.

You often get this gas through your house from a hot air furnace, or hot water or steam boiler fire in your cellar. This can be prevented if the person in charge of the fire will be careful when he takes the draft off by opening the fire door. It should be opened only to the limit where the flame of a match or candle will be drawn into the fire. If the door is opened beyond this point the gases will be drawn or diffused into your cellar and with the warm cellar air it will rise through the house. This same escape of gas often comes from a kitchen range when the cook takes the lid off to check the draft for the night. This, like the furnace door, should only be removed to the farthest point where the flame of a match or candle is still drawn in to the fire.

The cellar floors should always have waterproof and comparatively airproof floors. In some geological formations it is necessary on account of ground waters, and in cities the ground air should be shut out of the dwellings.

The sun's rays must be admitted to the rooms regardless of the pigment or color in the carpets and furniture.

In entering houses for inspection after the surroundings have been studied, we go to the cellar first, because the cellar air will usually circulate through the dwelling, and because it is out of sight and therefore the rubbish hole of the home. Time will not permit to tell you what I have found in the cellars of some of the largest mansions.

The house should be so designed that it can be well ventilated and each room see the sun's rays if possible. The low rambling colonial houses of the present day, built with the first floor level with the ground, are artistic but the cellars cannot be made sanitary, even with their area ways, as they are closed in time of storms and in winter, and remain closed until spring.

In cities and villages the cellar windows should be screened with cheese cloth. All windows should be screened from flies which are carriers of disease. All dwellings should have the maximum of windows so as to have as much movement of the air as possible.

There will have to be a rule governing plumbing. The Department rules do not permit the secret stop of a waste pipe in the lavatory or bathtub. If the waste pipe is plugged several inches back of the opening from the fixture, the first water you draw will fill up the waste pipe and back into the water you are drawing to wash in. Such insanitary basins must communicate tuberculosis

and other diseases, yet you will still find them in some of the most extravagantly furnished rooms. The old plug and chain are dangerous as the chains are hard to cleanse. The old fashioned standpipe or the pop-up plug are the only safe devices I know of at present.

I have found little wooden shacks with plenty of knot holes and furnished with large window sash more sanitary than some of the large houses. Our people in all circles of life need to be educated in health measures. In the last few years small houses have been much improved in appearance, which has its moral effect, yet, these small dwellings are too often heated with direct steam or hot water plants. The old shacks when kept clean were often more healthful.

Some of the foreigners who come to this country for a short time, with the idea of saving all they make so that they may return home with their little fortunes, will have to be deprived of the miserable tenement house accommodations as they are breeders of disease, in some of these places the mattresses never get cold as one shift follows close on the heels of the other. Such housing will have to be broken up and better homes built. Sometimes it is very discouraging to try to get such huddlers in better homes as they prefer living in dirty, badly ventilated places.

Some of the large industries are doing much to improve their employees' ways of living, and if we can succeed in teaching the people to avoid excesses such as the abuse of alcohol, those interested and responsible for good housing will have less work to do.

Let us teach the advantage to be gained by paying attention to the things which will prevent disease, as it will add to the happiness and morals of our people and increase their productive power.

The Chairman: It gives me great pleasure to introduce Mr. Paul N. Furman of the Pennsylvania Child Labor Association who has consented to act as Chairman of the meeting.

Mr. Paul N. Furman, Chairman: Dr. Carol Aronovici will open the discussion on "Housing Conditions."

Dr. Carol Aronovici, Secretary, Suburban Improvement League, Philadelphia:

I am very much interested in what Dr. Dixon had to say in his paper. My interest is not in how to use the home but rather what kind of a home we are giving the people to use. There is still a great deal to be done in improving the house itself, rather than with the individual who is going to use it. From that point of view there is more than the sanitary plumbing, or the thickness of the girders, or the height of the ceiling, or the depth of the cellar, or anything of a strictly structural character. In other words,

there is an economic side to the housing problem. In Philadelphia, there are four and a half times as many people who keep their homes in perfect condition as there are owners keeping their houses up to the same standard. Our task is distinctly in the direction of improving the houses themselves. There are a number of fundamental problems in connection with this subject which have been lost sight of in our housing work. First, there is the question of alleviating the congestion in our large cities. This is due to the fact that our working people do not have the proper transportation facilities. The factories are situated in the most congested sections of the city because there the labor supply is most available. Railroad fares between the suburbs and the city should be decreased. A man living in the city and paying twenty-five dollars a month rent will have to pay the same rent in the suburbs, and he is going to be willing to stay in the city because he will have no railroad fares to pay. Our factories should be taken out of the cities.

Belgium provides transportation for its working people at the rate of .0081 per mile. Five years ago this rate was further decreased ten per cent. The result is that Belgium is not a tenement country but working people live outside of the cities with access to the open country, with individual gardens and an opportunity to keep the family together.

Let us consider for a moment our legislation from the point of view of the man who wants to build a home. This is very difficult for him to undertake without getting into the hands of the speculative builder. As we have made no provision for loans, a worker wishing to build a house cannot secure funds without good backing and at a rate of interest far in excess of what French and German workers have to pay. In improving our housing conditions, we should make it possible for a man to borrow money at three per cent. You will find that our housing problem will be at least fifty per cent less when a man has his own home than it is today, and to accomplish this result we must offer inexpensive loans in sufficient amounts.

Seventy-five per cent of legislation is not enforced or poorly enforced. If you will put at the disposal of the ordinary working man, the means of building himself a home, you will greatly raise the standard of our housing conditions. By moving those who can build a home, to the suburbs, you will make room for the others who are living in the congested section.

Please carry home with you the thought that the housing problem is not a sanitary problem. It is an economic problem. As soon as the individual worker can build his own house, the demand for tenement houses will be so decreased that rentals will go down and the

housing conditions improved at a greater rate than can be secured by the most drastic legislation.

The Chairman: Mr. Ernest M. Hopkins, Manager of the Employment Department of the Curtis Publishing Company, will now speak upon "Co-operation Between Employer and Employee."

CO-OPERATION BETWEEN EMPLOYER AND EMPLOYEE.

ERNEST M. HOPKINS, MANAGER, EMPLOYMENT DEPARTMENT, THE CURTIS PUBLISHING COMPANY, PHILADELPHIA.

It is hardly possible intelligently to discuss present day phases of industry without at least a cursory look at the back-ground of the industrial revolution. It was from this revolution that in turn sprang the factory, the wage system, and the detailed specialization of labor.

It is idle to spend any considerable time in argument about the comparative welfare of mankind today and in time past. It might very possibly be shown conclusively that in proportion to the entire amount produced, the laborer today gets a smaller ratio in relationship to prices prevailing, than at some previous time, without its indicating at all that his actual status has not improved. The economic world has been transformed from one of deficit to one of surplus, and all classes, in varying degrees, have benefited from this evolution. The questions as to the respective degrees in which capital and labor have been responsible for this transformation and the questions as to whether they have respectively been rewarded according to their merits, are the questions which separate employers and employees, too often at the present time. Only by the willingness of each to recognize the importance of the part played by the other in this evolution, still in progress, can a basis be established for a bona fide understanding between the two. However, such an understanding once accepted, breeds joint interest in the production of wealth, which is the essence of industrial co-operation. The value of this, if it could once be established as general practice, would be beyond reckoning.

The life of the laborer in the self-contained feudal estate, the manor, or in the self-dependent clearings from which our own communities have sprung, was barren and restricted beyond compare beside even the less well-to-do of our workingmen today. Housing was in the rudest sort of shelters; diet was monotonous, with none of the variety of foods from which all men now benefit, and hours of labor were limited only by the necessities of sleep. There were herein,

nevertheless, factors which made for contentment that began to disappear with the introduction of power-driven machinery and segregation of industry within factories, such as a certain independence of movement, a variety of tasks which allowed change from one to the other, in avoidance of weariness, and contact with the respective stages of production from initial effort to completed whole.

Machinery began the transition to modern conditions, and the introduction of power carried it far on its way. The hand-loom, for instance, brought the laborer to a fixed place, and assigned to him a more or less definite task. The application of power made the centralization of machinery imperative at some point where joint use could be made of power, and thus removed labor from the individual's house to the mill or factory. Here began the long train of problems that have attended the centralization of production, the specialization of labor, the instituting of wage scales, and the reign of competition.

While the processes of production had been done in the house of the producer, the labor force had been made up largely of members of the family, or those who, under apprenticeship agreements, lived with little distinction between themselves and members of the family. The removal of these processes to a building set apart for their uses opened the way immediately for difference as to the basis of selection of the worker, and for difference in his treatment, once selected. New factors of expense arose that the producer had to assume—the building which was the mill or factory, and the machinery with which to work. These were more or less fixed expenses, and the most easily reduced expense was that involved in labor. Meanwhile, as decades passed, under the rule of competition and the wasteful processes of manufacturing, profits were not always secured with ease, and there was little disposition among owners to hunt trouble by undertaking factory improvements that would have seemed to them to have had little relationship to success in the production field. Thus it was that for a century and more there was scarcely an improvement introduced into the factory system designed specially for the workers' good. There were exceptions to this rule, to be sure,—certain *un-business-like men,* who so greatly liked to have their people happy that they spent their money for this purpose. Even this, however, when existent, had much of paternalism about it—but in its time it was good.

There is no need to describe how different is the attitude today. The progressive employers have turned their attention to the scientific selection and scientific treatment of employees, and the employees themselves have accepted the efforts along these lines as evidence

of good faith and are giving their best efforts to their employers' businesses. There is genuinely a joint interest in production—a co-operation between capital and labor.

If this tendency had gone a little farther and had become somewhat more completely the rule, we could speak of co-operation as a present fact. But we still must speak of it as a goal toward which we are advancing, sometimes rapidly and sometimes slowly, but always with some progress defined. The assumption on the part of great industrial concerns or great bodies of workers that they are above or beyond the law is so infrequent as to attract almost universal attention and almost universal condemnation when it appears. Moreover, the corporation which assumes to be beyond the reach of public opinion or the labor organization which disregards it, enters upon any conflict that may arise, so handicapped as to have little likelihood of success in the eventual settlement.

It is the belief of not a few that great as have been the strides in the processes of production in the past, there will be advances as great or greater in the near future, as a result of the efficiency which will come from co-operation of labor and capital, working in sympathy with each other's interests for the common purpose of increasing the economic wealth of the nation, each deriving its advantage therefrom. Such a result will be dependent upon employees giving not only a perfunctory and formal attention to their assignments, but a loyalty in sentiment and an enthusiasm in accomplishment which shall carry the output of productive methods into new realms. It will likewise be dependent upon the employers' knowledge not only of their plants and machinery, but also of the temperaments and attributes of their men. The equivalent must be found for that spirit of buoyancy and zeal with which the frontiersman meets discouragement and conquers complications. Those desirable things which attended work before the age of specialization must again find their places in the workingman's life. There is now a constant effort being made towards a decrease of working hours. Only in this way can vitality enough be preserved for interest and participation in other things, which broaden life and at the same time relieve fatigue. Such recreation leaves the man both a better citizen and a more efficient workman.

Incidentally, it may be said that this factor has been reckoned with by many concerns to a degree surprising to the uninformed. I have intimate knowledge of a concern wherein it has been found feasible to concentrate the week's work of the manufacturing department in five days, of not over-long hours, leaving Saturday and Sunday free for the employees' own use. It was, I believe, not more

than three years ago that a great department store found, in an analysis of its business, that the trade of the week-end half day was of little importance, and thereupon closed its shop from Friday night until Monday morning throughout July and August, with no less pay to its employees. The number of stores which did this last summer is beyond my knowledge, but it was many more than the original one.

These facts lead particularly to the deduction that excessively long hours have prevailed in the main because of the ignorance of employers as to the effects of fatigue. Many who would not argue that an employer should shorten hours simply for the sake of giving employees more time to themselves, would concede that the employer should know at what limit, in the number of hours required per day or week, he would get maximum production of major quality. It is a matter of record that, in various industries, an actual increase in output has resulted from decrease in working hours per day. There is, of course, a point at which this process stops, but the intelligent employer needs to be guided by something aside from precedent, if he is to be the co-operative employer, while the employee needs to recognize (as he usually does) that he must put more concentration upon his work, if he is to be relieved of longer hours,

Intelligent analysis of working conditions, that knowledge may be had of them by employers, is not only the employees' right, but it is due the industry itself and it is all essential to co-operation. The so-called welfare activities of modern industry are founded upon this principle, and if commercially worth while, they must hark back to it continually.

Conditions under which an individual or a small group of individuals might work not uncomfortably may become almost intolerable when hundreds or thousands are gathered together and subjected to the regulations necessary when men are assembled in large bodies. State and National inspections are forcing upon the laggards, the modern view of fire prevention and fire escapes, protection from dangerous machinery, and safeguards against occupational diseases. There are some lesser things of a fundamental sort that are not as rigorously watched, that an employer cannot be ignorant about, if he wishes the co-operative spirit to exist in his plant. Opportunities for personal cleanliness, such as running water and washing facilities, including soap and towels; conveniences, such as locker-rooms and toilet facilities; essentials to health, such as suitable temperature, ventilation, light and pure drinking water, need constant and solicitous attention. Furthermore, these are rights of employees, and must be provided as such, for if they are given as concessions

or benefactions, the co-operative aspect is lost, and they become assumed to be another effort of capital to make labor dependent upon it.

The greatest grievance that any group of employees can have against their employers is lack of intelligence in the conduct of their business. The man who assumes industrial leadership is an industrial menace, unless he makes or has made those studies which shall inform him as to the vital facts of his business, such as manufacturing costs, hours of labor required for maximum production, the distinction between increased individual wages and increased total expense, and so on. Gradual elimination of seasonal employment and reduction in labor turn-over must be his aim. If his mind is as busy with these problems as with questions about his plant and his machinery, he can logically expect his employees to be solicitous as to his interests, and can properly insist that those who have not this co-operative spirit, must leave. In general, we expect leadership to be informed about the path along which it purports to lead, but one of the most disturbing factors in our industrial life has been the type of employer which has had no further knowledge of where he was going than that he was on his way.

Good faith, then, is the quality needed above all else in the attitude of employers and employees toward each other. I have not undertaken to go much into detail as to different phases of co-operation in successful plans now employed, such as the conspicuous case of the "Protocol of Peace," in the garment trades, or such as profit-sharing schemes, self-governing bodies of employees, pension and insurance plans, and the like. These, after all, are but details of method, if the main point is conceded, that joint effort can lead us into a new era of industrial prosperity. This is the vital reason for co-operation.

CONDITION OF WOMEN IN MERCANTILE ESTABLISHMENTS.

MISS MARY McCONNELL, THE CONSUMERS' LEAGUE OF EASTERN PENNSYLVANIA, PHILADELPHIA.

A recent compilation of data on the condition of women in the mercantile establishments of Philadelphia was completed about the 15th of last June, and it is of this that I shall speak. The inquiry included about ten thousand women employed in fifty-five stores in the down-town and neighborhood shopping centres. Of these women, only 3.3 % were under 16 years of age — a decrease from earlier

figures, due no doubt to the introduction into stores of mechanical devices, such as telephone, pneumatic tubes and cash registers.

A situation which is perhaps unusual, is the number of neighborhood shopping centres inside the city of Philadelphia. Of these there are at least seven, in which stores of every variety are to be found. A characteristic neighborhood is made up of one or more small department stores, millinery, clothing, shoe stores, five and ten cent stores, grocery and provision stores. The majority of these districts lie in manufacturing centres and among the work-a-day populace, the custom of evening shopping has grown up. The stores are open on Monday, Friday and Saturday evenings until 9, 10 and 11 o'clock and merchants declare they do more business in these three evenings than in the whole remainder of the week. This late closing has caused practically all sales-women under 21 years of age to be debarred since the enactment of the new Woman's Labor Law.

The saleswomen in these stores usually work three long and three short days, totalling 54 hours a week. On the days when the stores are open late, the workers come on in shifts or take extra time off for meals in order to keep within the 10-hour day. It is a privation to them to be obliged to give up their evenings which are dear to the hearts of all working girls. The fact that they live near their work and spend no car fares and that they are able to go home to lunch, may however partially compensate girls for this.

These conditions do not pertain to the down-town stores where night shopping even at Christmas time has been abolished for several years. With the 8.30 opening hour, the down-town saleswoman's day has been reduced to 8¼ hours, or 49½ hours weekly. In addition to this they have a half holiday on Saturday in July and August and an extra half hour a day from June 15th to September 15th, when the stores close at 5 P. M. Legal holidays when the stores are closed are paid for throughout the city, but in the down-town stores holidays are more frequent—one store receiving as many as eight during the year.

Six down-town department stores employ about 80 % of the women included in this study. The buildings occupied by these stores are with one exception made up of old business houses which have been gradually annexed as trade increased. They are nonfireproof and are therefore of a type no longer permitted to be constructed for public buildings. The fact that they are old and un-uniform, or not designed as a unit, leads to many unfavorable conditions, such as lack of light and of adequate ventilation and, where the plumbing has not been renewed, to lack of sanitation. One undesirable feature of these stores is that the basements which are cellars of a former day and were therefore not designed for the purpose they now serve—are still used

for selling. This condition continues no doubt on account of the subway entrances to the store basements, but the newer and better New York stores have completely done away with selling in this part of the store.

The ceilings of the Philadelphia store basements are unusually low and the air often becomes noticeably vitiated and stagnant. In this part of the store, special "sales" which attract large numbers of people are often held, and the space at these times is much overcrowded. Systems of enforced ventilation have been installed, but these are only partially effective. In one store no provision for heating or filtering the outside air is made and hence on cold or dusty days when the ventilators must be closed, the system is not in operation. If the air in summer is not cooled, basements in which there is no natural circulation of air become almost unbearably hot. In another store the in-take and exhaust air pipes are placed opposite each other, so that the air passes directly from one to the other, without making a circuit of the room or affecting the dead areas which form. Fans, which are frequently used for this purpose, prevent the air from becoming stagnant but are of no value from a ventilation standpoint.

The stores have not therefore entirely neglected the basements, but no artificial system of ventilation could completely surmount the structural difficulties. It is scarcely possible to realize the depressing effect on spirits and health which is produced by spending all one's working days in these poorly ventilated basements where no ray of daylight penetrates. Employees and customers have a right to demand equally as hygienic conditions in the basements as in other parts of the store and unless they can be made such, it would seem that basements should not be used for their present purpose.

A popular criticism of department store management is a lack of seats for saleswomen. The permission to use seats where they are provided depends often on the department head with whom the old tradition that a saleswoman must always be standing at attention is sometimes firmly fixed. This idea is however gradually giving way and some stores are instructing employees in the value and use of seats as well as in the value of proper deportment and wholesome food.

On one day in May of this year, a count was made in five department stores, which showed 495 girls at aisle tables and squares without seats. This was undoubtedly due to neglect. At counters, 235 saleswomen were without seats, 159 of these were at counters where there were no seats whatever and 84, where the proportion specified by law of 1 seat to every 3 employees left them unprovided for. It is no doubt true in many stores that, as managers say, a seat may be had

upon request, but a timid girl or a new employee fears to endanger her position by any seeming complaint. The chief reason for the scarcity of seats at counters seems to be the unduly narrow space between counters and stockcases, in which two saleswomen sometimes can not pass with ease. Chairs are often voluntarily disposed of by saleswomen in order to avoid stumbling over them. Stools on springs which close up when not in use, have been installed in some places, but when in use, these too block the very narrow passages. A more generous allowance of space behind the counters would no doubt be welcomed by saleswomen.

The wage data for this study were taken from the pay rolls of five department stores and includes 7,525 women. About half of them were saleswomen, one-quarter, clerical workers and the remainder, cash girls, wrappers and inspectors, cashiers and stock workers. The wage received by the greatest number of saleswomen was $8; of clerical workers $6; and of the other workers, the range was from $2.50 to about $7. Of the total in all occupations, 33.6 per cent were receiving under $7, 50.9 per cent under $8, 70.6 per cent under $9, 79.8 per cent under $10, and 96.8 per cent under $15. The maximum wage was $25, received by 0.1 per cent of the workers.

These figures include no wages of buyers or of women in purely executive positions. They represent weekly rates plus the weekly average of commissions and premiums for 3 months—in one store for a whole year.

These wages are higher than actual earnings, since no deductions for absences, unemployment, lateness, mistakes or dues to beneficial associations, were made. Mistakes consist of such so-called "blunders" as writing a name or address wrongly, missing a page in the salesbook, failure to paste a transfer sticker on the sales sheet, tearing a voucher crooked, failure to ring up on the time clock, etc., and cost from 10 cents to 25 cents. Any loss to the house from selling articles at a wrong price or making wrong change must be borne by the employees. Dues to beneficial associations range from 10 to 60 cents monthly according to wages, and sick benefits from $1.50 to $6.00 weekly for a period not exceeding 10 to 13 weeks in a current year. Beneficial societies exist in all five stores, membership in which is compulsory after 3 months' employment. Should an employee resign or be discharged from any of these houses, her membership in the association ceases. If, however, an employee is re-engaged at a future time, membership is resumed from date. Dull seasons often cause a cutting of forces and girls through no fault of their own are thrown out of employment. A strong sentiment exists among many employees who feel keenly the injustice of a compulsory system of insurance and the arbitrary suspension of liability.

As a back ground to the wages received by store women, schedule-budgets of weekly expenditures were filled out for 800 workers. Of these two-thirds were living at home; the remainder were "adrift." The average items of expenditure are $4.40 for room and board, $1.71 for clothing, 60 cents for car fare, 17 cents for recreation and $1.65 for laundry, insurance, doctors' bills and incidentals—a total of $8.53 weekly. This is probably the least figure on whch a normal existence can be sustained. Many girls struggle along on less than this, but not without strain which in the end tells on their nerves and on the efficiency of their work.

I do not wish to be understood in any way as quoting a minimum wage for store women. Market values fluctuate constantly and figures on the cost of living vary in accordance. Comparing this $8.50 figure however with the contemporary wage data, we find that 69.2 per cent of the women in department stores were receiving less than that amount.

Miss Florence L. Sanville, Representative, The Survey: Were the dues fifty cents a week deducted from the eight or nine dollars?

Miss McConnell: Forty cents from eight dollars. They vary somewhat according to the salaries.

Mr. Ira D. Shaw, Welfare Secretary, Harbison Refining Co., Pittsburgh: How much benefits do they get?

Miss McConnell: That also varies according to the salaries. Benefits range from $1.50 to $6.00. A girl must be ill one week before she is entitled to any benefits whatever.

Mr. Shaw: Do those salaries include the P. M.'s?

Miss McConnell: They include the P. M.'s but not the deductions. The wages are therefore higher than actual earnings, including all additions to regular rates but no deductions whatever. The premium charge varies from ten to sixty cents a month.

The Chairman: Who has control of these beneficiary associations? Who figures the rate?

Miss McConnell: The officers for these beneficiary associations are elected annually by the store employees. They include members of the firms and store employees. I believe the rates are not controlled by the officers of the society. The officers in some stores are entirely employees who have control of the current business of the society. In other stores, members of the firm and managers are included on the staff.

Mr. Shaw: Can you give us an idea of the number of women who receive ten dollars or over per week?

Miss McConnell: 87 per cent of the women are receiving under eleven dollars per week, that means ten dollars and over. Ninety-

three per cent. are receiving under $13.00; 98 per cent. are receiving under $16.00 and 99 per cent are receiving under $25.00. These figures do not include buyers and assistant buyers and women in purely executive positions. There are a few saleswomen who receive $25.00. These comprise .1 per cent of the women in the stores. The usual maximum is $8.00. That average relates to those who have been in the employ of the store from two to nine years.

Mr. C. R. Dooley, Westinghouse Electric & Manufacturing Co., Pittsburgh: Do you have any data in comparing Philadelphia with other cities?

Miss McConnell: Not here. The Federal Government made a study in 1910 which forms a basis of comparison of different cities. The States of Massachusetts and New York are making such studies.

Mr. Shaw: Have you figures that compare the women who work in the stores with the women in other trades?

Miss McConnell: For only a few trades. A recent study of the bookbinders shows the greatest number are receiving $8.00 and under. Pay-roll figures of actual earnings show 70 per cent to be getting under $8.00.

Mr. Dooley: Do the two-thirds that are earning these low wages have a mentality that would enable them to earn more?

Miss McConnell: Stores have realized that education is one solution of store problems. Two of the stores have established complete systems of education. Employees under 18 years of age attend these schools from three to five hours a week during store hours. The education is continued from the grade in which the employees were when they left the public schools. The purpose of the store is to identify these employees with the house.

Mr. Dooley: What is the average period of service in any store?

Miss McConnell: I haven't this data with me. I think most of the employees are fairly regular after perhaps the sixth year of service. After the sixth year there is less changing about and the wages quoted confirm that fact. There is a good deal of changing under five years.

Mrs. H. H. Wheaton: It seems to me that the final point of this report is that after all these deductions that have been described that have been taken from her wages, the girl is unable to earn a living. The deductions are the sociological and psychological part of it. In doing some personal work I had this data given to me. About a year ago, in a city not in this State, I was taken to a box factory on the day of paying-off, when I saw a sight that very few people have had the privilege of seeing and received a new view of this matter. The girls got their envelopes and then sat down in a little place and

opened them. After they had opened them, two-thirds of them were crying. They said, "Just see what I got after working a whole week and the deductions were made for mistakes. How can I take a dollar home for a week's wages?" It seems to me that the question is what the women actually take home to live upon. I have studied these questions quite extensively and they always come back to that one thing again—the solution of the deduction problem. I believe that if this matter of deduction were settled, our question of immorality would be settled. Isn't there some way of doing away with the deductions?

Mr. Dooley: Do the deductions really result in an improvement?

Miss McConnell: They are not wholly corrective. Girls feel that in many cases they are docked unjustly. A girl is often charged for mistakes that are not her own. In the case of a rush, a customer may give her name and address hurriedly and perhaps the girl writes it wrong. The girl is not to blame and yet she is held responsible and is fined just the same.

Investigation has shown that deductions for lateness are not corrective. Several employers are of this opinion themselves. In one store, they found that in spite of fining, the same girls came late every day. The fining system had no effect whatever. The employer changed the system and had all girls who were late wait in his office until he arrived. The shame of being found frequently in this undesirable position soon took effect. Many of the stores are trying to eliminate the system of fining by using other methods of correction.

The meeting adjourned at 11:45 A. M.

HYGIENE SECTION.

Thursday morning, November 19th, 1914, 9:00 A. M.

The Hygiene Section met at 9:00 o'clock A. M., Thursday, November 19th, 1914. The meeting was called to order by the Chairman, Dr. Alice Hamilton, of the National Bureau of Labor Statistics.

LEAD POISONING.

DR. ALICE HAMILTON, NATIONAL BUREAU OF LABOR STATISTICS.

During the last four years it has been my duty to visit and report on the conditions in the lead trades in the United States, taking them up one by one. When I speak of lead poisoning, it is not as a theorist, but as one who has studied the subject, not only in books, but practically, in this country and in Europe.

Lead poisoning is a fact, in the United States as in other countries, although there are men who are not susceptible to lead poisoning. The Germans say that about twenty per cent of all men will not take lead poisoning, just as a certain percentage will not take typhoid fever. About an equal percentage is over-susceptible, and sicken with appalling rapidity. The remainder are ordinarily susceptible; they will take lead poisoning if the exposure is too great or too long continued, because lead is a cumulative poison.

The oxides are fully as poisonous as white lead, if not more so, because they are so light and fluffy. I found that there was more poisoning among the oxide men than among the white lead men in the same shop because the work was dustier. The sulphate has been called non-poisonous, but this is a great mistake, although it is not as poisonous as white lead. If you should go to the two places where lead sulphate (sublimed lead) is manufactured and examine the men engaged in its manufacture, you would find a good deal of poisoning. Even lead sulphide, we have found to be capable of setting up lead poisoning; indeed, we discovered a great many cases in a St. Louis hospital, contracted in the Missouri lead belt by miners and by men in the concentrating mills who were handling pure sulphide ores. As to molten lead, many employers tell me that it is unnecessary to have hoods and exhausts over kettles when the lead is not over a certain temperature; but we do not know at what temperature lead begins to fume. In Chicago, at the present time, the largest

number of cases of lead poisoning reported to the Factory Inspector's office are among men using solder and babbitt, and you know the heat required for that is not great. The only safe rule is that in Great Britain, that all molten lead should be covered or hooded in such a way to carry off the fumes. This should apply also to linotype machines, at least until we have incontrovertible evidence that there are no fumes from these machines.

I want to speak now of the relative danger of the different kinds of lead absorption. We usually say that lead may be absorbed by the skin, by the lungs or by the stomach. The latest studies show that the last is by far the most important. Skin absorption can be almost ignored. When I was in England I visited the great white lead plants where lead poisoning used to be quite terrible, but where it has now almost been eliminated. There I saw men smeared with white lead up to their shoulders; but the management knew there was no danger, because they would all wash thoroughly and take off their dirty clothes before they ate their lunch and before they went home. What the management did guard against most strictly was dust, for they know that the men could not avoid breathing that in. My own experience confirms this. I found a very high rate of lead poisoning among sanitary ware enamelers, who do not get dirty, but who must breathe quantities of the dry enamel which they are sprinkling over the heated ware; and I found a much lower rate among white ware dippers, who work all day with their hands soaked in liquid lead glaze. The difference is even more striking when one realizes that there is a good deal more soluble lead in the potters' glaze than in the enamel.

Leaving out, then, skin absorption, we still have absorption from lungs and stomach; and I think we need not try to distinguish between the two, because, after all, what is breathed into the mouth is chiefly mixed with saliva and swallowed, so that it reaches the stomach just as does that which is swallowed with food handled with dirty fingers. It is, however, very important to know which is the greater danger, dirty hands or dust in the air, and whether it is more important to give the men good washing facilities or to devote the money and work to keeping down dust.

I find almost always the emphasis laid on the former, not on the latter. Physicians as well as superintendents and foremen seem to believe that men are poisoned by the lead carried into the mouth from dirty hands, and quite forget to estimate the dust and fumes which they may be inhaling. I do not wish to give the impression that I think personal cleanliness of little importance, but I feel quite sure it is not as important as cleanliness of the work place. A

man puts his fingers in his mouth seldom, if at all; he eats only three times a day; but he breathes all the time. In the case of soluble lead salts, such as white lead or the oxides, when used in great quantities, it is most important that the men be given ample washing facilities and required to use them. Even here, however, dust is more dangerous than anything else, and in lead smelting and refining, and in the making of sheet and tube and wire, dust and fumes are all-important.

The men in charge of lead smelters often tell me that lead poisoning comes because the workmen will not wash their hands properly and leave bits of lead under the nails; and all the time I know that these men are working in an atmosphere thick with lead fumes. The men might scrub their hands every hour, and they still would get poisoned. In fact, I know one large smelter where an excellent bathhouse with showers and hot water and soap has been in use for more than a year, but lead poisoning is still very common because the dust and fumes are not controlled. The rule should be to give the men plenty of opportunity to keep clean, but to devote most of the money and the attention of the management to the control of dust and fumes. This usually cannot be done without artificial ventilation, and that is expensive, of course. Cleanliness is best obtained by water, as I have seen in many English plants. English potteries, for instance, must have the floors of the dipping-rooms made of tiles and sloped to a vent for the water with which they are flushed at the end of each day's work. Vacuum cleaning is not as safe as flushing but may have to be used when the dust is valuable. Wet sweeping is better than dry, which should never be allowed; but better than either is mopping.

One is often told that if wash-basins and soap and towels were provided, the foreign-born workmen would not use them; they could not be forced to bathe or even to wash. Experience shows that this is not true, that a foreman who really wishes to train his men to habits of personal cleanliness succeeds always. If he begins by being sure that he will fail, then he probably will. But I cannot count the factories I have visited where the workmen were using and enjoying the facilities for cleanliness provided for them, foreign workmen too. It is a question of patient instruction at the beginning, and of understanding the men's habits and prejudices. You will find that foreign workmen will object to big unpartitioned bathrooms far more than will Americans accustomed to going swimming together as boys.

The responsibility of the management for the health of the men is greater in some lead trades than in others. The employer in

an organized industry has discharged his responsibility if he puts in the proper protective devices and sanitary equipment. It is for the men to avail themselves of these or not. But in the case of an industry employing foreigners, with no voice in the conduct of the plant, the responsibility is much greater. Of these men you expect the obedience of children, and you should be patient with obstinacy and stupidity and blundering.

I now want to introduce Dr. F. D. Patterson, of Harrison Brothers & Company and of the J. G. Brill Company, who will give us a set of motion pictures illustrating the "Correction of Lead Poisoning."

Dr. Patterson here showed motion pictures.

The Chairman: I am sure I voice the feeling this morning when I say that all of us have viewed these pictures with interest. You can see that the conditions that used to be considered adequate are now obselete, and these improvements that were shown you today have all come within a short period of time. I am sure that the white lead manufacturers ought to congratulate Dr. Patterson and his company on what they have done.

The next name is Mr. Abel Wetherill, of Wetherill & Brother, Philadelphia.

Mr. Wetherill: I have seen the slides and have listened with interest to the remarks on Lead Poisoning. I think both Dr. Patterson and Dr. Hamilton deserve a great deal of credit for the work they have done. I am sure that they will help us, if we can get the workingmen to take their advice and use the washing facilities. I think that will be the greatest thing that we can do now.

We had a great deal of trouble to get the men to wear respirators, but through the insistence of the superintendents and the foremen, we were at last successful. I feel, myself, that the best respirator to use is the one of rubber, with which we have the greatest success as it fits the contour of the face.

Dr. Patterson: I want to say on behalf of the committee which the Commission appointed in order to draft regulations for the lead trade, that we want the very fullest possible discussion on this subject, and the committee invites the very fullest criticism and comment upon its work.

The Chairman: I have asked about the respirators because I have found very often that it was not considered possible to get workers in lead to wear the rubber and sponge respirator. It has been successful in the white lead plants; but I think in white lead plants there is no great physical exertion. In the enameling of sanitary ware and in many of the processes of the lead industry, there is great physical exertion. There I find it is not possible for a man to get

enough air through a rubber respirator to enable him to work, and that is why I should always prefer the use of a respirator which the man can really use, even if it is not the best kind. It is true that there should be a respirator which fits the contour of the face and shuts out the dust; but that may not be possible where the men work hard. That is why I noticed in Dr. Patterson's picture, the English stack-stripper wearing a bag. That is the respirator in use in England and in Germany. It does not shut out all the dust, but they claim that the men can wear it, and it is better to wear a poor respirator all the time than to be continually pushing off a good respirator, which men will do.

Dr. Patterson: My experience has been that a respirator which would exclude all of the dust which might be in the air is impracticable. I know of no type of respirator which will exclude all of the dust. I believe that the ideal respirator is one which will filter and remove a certain quantity of the dust which is in the air, and the men will not breathe any air which has not been filtered through a cloth or a sponge. We have examined them in Germany and in England, and some we tried to make ourselves, and our object is to try to fit the contour of the face to such an extent that whatever air does get in will be filtered. Our experience has been that the rubber and the sponge do not give the men enough air; but we can get the men to wear a respirator of cloth, cheese-cloth, linen and various other materials.

The Chairman: I shall call upon Mr. L. R. Palmer to read a paper by Dr. Randall Zimmerman, of the Westinghouse Air Brake Company, who was not able to be present. The subject is "Brass Foundry Ague."

BRASS FOUNDRY AGUE.

RANDALL ZIMMERMAN, M. D., WESTINGHOUSE AIR BRAKE CO.

This disease is never the direct cause of death, but is a potent factor in predisposing causes. On this account, chiefly, the condition has failed to incite proper investigation and study, so that of all industrial diseases, brass foundry poisoning comes to the notice of the general practitioner less than any other condition. So seldom does a doctor see a case in its incipiency that he is liable to confound the symptoms with a number of infectious diseases which have a somewhat similar onset, chief of which might be cited, malarial fever.

A typical case will serve for an example: After a hard day's work and the breathing of fumes, the patient develops a feeling of malaise and headache. Perhaps on his way home, or during the evening, he has a chill of varying intensity. In a severe attack, within a few minutes, he shakes like a leaf, his teeth chattering and his knees knocking together. He may be attacked by violent cramps in the legs, his face becomes white and pinched and he sometimes, though rarely, vomits. The patient who has had instructions from older employees as to how to care for the "shakes," immediately covers himself with blankets and takes a hot drink, but none of these measures modifies the chill. It lasts from one-half to one hour and then suddenly ceases of itself. Next comes the fever period, followed by a drenching sweat and the sensation of great relief. The patient falls into a deep, exhausted sleep, and wakes the next morning rather weak and perhaps irritable in temper, but ready for work. Gradually during the morning his strength returns and for the balance of the day and week he is in ordinary health. Each attack seems to render him more immune to the fumes and as long as he breathes them daily, he remains in fair health, but let there be a few days absence from work, the night of the first day's return to work would find him with the same old "brass chill."

We find this malady peculiar to the winter months. It is a noticeable fact that during the summer months, when the windows and doors of the foundry are left open, affording plenty of ventilation, the condition almost entirely disappears, but with the onset of cold weather, when doors and windows are usually tightly closed, in order to prevent both the chilling of the men and the molds, the condition makes its appearance and continues until the advent of warm weather. This one fact discloses at once the essential treatment of this condition, which, in this case, is prophylactic or preventive. Experience teaches us that those brass foundries which have poor ventilating facilities produce the largest number of cases of this ague, hence the logical conclusion to be reached is that those brass foundries which are equipped with modern ventilating facilities are the ones in which the fewest cases occur. As a general rule it may be said that men employed in foundry buildings with high roofs and proper ventilators, are less frequently attacked, and, conversely, those employed in low roof buildings with improper ventilation are more frequently attacked. The remedy which suggests itself naturally is buildings with high roofs and adequate ventilation, or when this is impractical, low roof buildings equipped with an exhaust system to carry away the fumes.

The Chairman: Mr. Louis T. Romanoli, of the Tailors' Union of America, will address us on the subject of "The Garment Workers' Industry."

THE GARMENT WORKERS' INDUSTRY.

LOUIS T. ROMANOLI, TAILORS' UNION OF AMERICA.

I can say without contradiction that 99 per cent of the custom trade in the clothing industry and its allied trades, is what is known as home work. Some of you will be surprised to know what home work means. A suit is ordered in a beautiful store, nicely furnished, and the expectation of the customer is that the suit is manfactured on the premises. But nothing of the kind takes place. After the suit has been ordered, the coat goes to a coat maker in one section of the city, the vest goes to a vest maker in another section, and the trousers go to a trouser maker in another section. The merchant tailor seldom has any knowledge as to the condition of those workshops, which are in private homes. They generally use what is known as the back room part of the dwellings or tenement houses, and sometimes the kitchen. We have a very loose system of inspection. Since 1905 a change was made in the factory laws, and the inspection of home work was given to the City Board of Health which is enforcing the rules and regulations very loosely. I went to the Board of Health and applied for a permit to work at home; I waited about ten days before an inspector came, who only went into the yard to see what kind of privy there was. Next came the medical inspector, and he issued the permit without inspecting.

Disease can be carried in clothing. On Monday, when I returned home, I found one of my children sick. On Tuesday morning, I left for Harrisburg, and this morning I got a letter saying that the boy has scarlet fever, and he has been taken out of the house. Now, had I been at work, ninety-nine chances to one, I would have finished the garment I was working on and returned it to the store, and the store in turn would have delivered it to the customer.

The customer has very little protection as long as the home work exists. Not only is this work dangerous to the public health, but it is dangerous to all families. It is a system which works between the merchant tailor and his journeyman, and each one is afraid of the other. It is not only a certain class of work, but all classes under this system. A large manufacturer of ready-made clothing some

years ago called in the Secretary of the Child Labor Committee to inspect his beautiful shop—one of the biggest in the city; the Secretary in turn wrote a beautiful letter, setting forth the sanitary condition of the shop. But the firm didn't tell this gentleman that the working men and women took the work out in bundles to be finished in their homes, and the clothes would be liable to be infected by germs of disease.

The elimination of home work must be brought about and as soon as the public realizes that it must demand the knowledge of where the clothes are manufactured, the better it will be.

The small box in which you get medicine from the druggist has been made by little children or women in the back kitchen, or in some dirty place. The reason is an economic one. The manufacturer tries to save floor space, and the workers working at home have not so much expense, and, therefore, they can make the work cheaper. The work, on the other hand, is easy, and can be done at home for the greater part of the day, and by working anywhere from twelve to twenty-four hours. But the only practical way to eliminate the dangers of carrying germs on a manufactured article is to have it manufactured in a factory.

Mrs. Martha Keller, Inspector, Department of Labor and Industry: When you have a factory in which there are fifty people, how many visits from the factory inspector would be necessary to keep that place in good condition? You have fifty people of different mentalities and different ideas as to cleanliness, and how can you control that?

Mr. Romanoli: A factory inspector will have charge of the work and I believe that a very few visits will be necessary. I know at one of the shops an inspector from the Department in Philadelphia told the men how to sweep the shop, and that she would come in sometime and if the shop was not then in good condition, she would close it up. I believe a couple of visits will entirely eliminate the trouble. If the factory inspector gives orders for things to be done, the employer will do them.

A Member: Can Mr. Romanoli tell us about how many home workers there are in Philadelphia?

Mr. Romanoli: The custom trade alone has ninety-nine per cent, but I have no figures in detail.

A Member: I asked that question to emphasize Mr. Romanoli's talk. I have a list of something over seventeen thousand.

The Chairman: Mr. John Monteith, of the Insulators' and Asbestos Workers' Union will now address us on "Shop Sanitation."

SHOP SANITATION.

JOHN MONTEITH, INSULATORS' AND ASBESTOS WORKERS' UNION.

We have just seen pictures and heard very good remarks made as to the work that is being done in behalf of humanity. I failed to see any pictures of or hear any remarks being made about the dust and various refuse that arise and settle upon boilers, pipes and rafters. We believe that these places have been sadly neglected, and my organization has instructed me to bring before this Conference for its consideration the following conditions that should be remedied:

Permitting large quantities of dust, dirt and refuse to collect on top of boilers, pipes, rafters and flues, in boiler-rooms. These places being out of the way, and visited only by workmen who may have work to perform thereon, are sadly neglected, and are the cause of impairing the health of many men.

Fumes are permitted to be conveyed into the atmosphere through stacks and various outlets in and around chemical works; this could be stopped by the use of an apparatus to abate the smoke, and something of this kind may serve to carry away fumes from chemicals.

The above suggestions come from an experience I had while doing a job in a large chemical plant in Philadelphia. The job took nearly four months to complete, and during that time I had working under me some twenty or more men, but could not hold any one of them longer than for a few days. The fumes or other substances in the atmosphere affected their eyes and their skin, and they could not stand it; some it affected internally.

The Chairman: If there is no further discussion, we shall close.

SAFETY SECTION.

Thursday, November 19th, 1914, 9:00 A. M.

CHAIRMAN C. S. CLOSE, UNITED STATES STEEL CORPORATION.

The Chairman: Ladies and Gentlemen: We have quite a long program for this morning and it will be necessary for us to start promptly and keep within the rules laid down. These rules are twenty minutes for papers and ten minutes for discussion, and I ask you all to keep within those limits if you can.

The first speaker on the program is Mr. Thomas Durban, of the Erie City Iron Works, Erie, Pa., who will address you on the subject of a "Uniform Boiler Code," and I now introduce Mr. Durban to you.

A UNIFORM BOILER CODE.

THOMAS E. DURBAN, ERIE CITY IRON WORKS, ERIE, PA.

There is no question but that the preservation of the life of its citizens is one of the first duties of any Commonwealth, not only the preservation of life, but the prevention of accidents that may lead to death or render people incompetent to pursue their vocation.

That factories should be supervised; that dangerous practices should be abolished; that buildings should be looked after so they are constructed safely and with proper means of egress in case of fire; that railroads should be compelled to use proper safety devices, and in fact, anything that points toward the goal of safety, is a desirable thing.

I wish to call your attention to the fact that an item of most vital importance in this line has received very little or no attention from this State, viz., Steam Boilers. Careful supervision is now being made of factories so that the employees will be protected from coming into contact with gears or being caught by set-screws on a shaft, or going in dangerous places about the mills and factories.

The buildings themselves are provided with the best fire protection, and tall buildings are required to have fire escapes, in order that people may be able to make a safe exit in case of fire. And yet in these same buildings, from five to ten or twelve stories high, that are built with the utmost care, and with a large factor of safety in

order to protect their occupants, under the present law it is possible for a man to place in the basement an engine of destruction which may wreck any one of these buildings in a moment, and render useless all precautions that have been taken for the employees or the occupants to escape.

With all the care and protection that is being taken to guard life, there has been no State legislation on steam boilers, and yet a steam boiler explosion is one of the most dangerous things that can possibly happen and may be destructive of a great number of lives and a vast amount of property, because of improper construction and inspection, due to the fact that the purchaser of the boiler has not been surrounded with proper safeguards. Is it not almost an absurdity that this thing must exist? The number of lives that are lost through accidents of boilers is enormous. There is scarcely a day, that somebody is not killed or severely injured, in this Commonwealth, because of a defective boiler.

If these accidents were to happen at one time and in one place, a cry would go up from the Commonwealth that would make it imperative that legislation take place on this subject; but as they happen almost continually, and it does not occur that the press takes it up and exploits these things as they do other accidents, we lose sight of them and become, as it were, accustomed to them.

Investigation of the records of insurance companies will show that a large number of lives and a vast amount of property are sacrificed every day, because of the lack of supervision of steam boilers. It is such common practice to use steam, that we have perhaps forgotten what an element of danger there is connected with it.

The boiler makers throughout the country have been trying for years to get a specification adopted which would insure, as far as possible, the safety of their product, but until recently they met with very little success in the way of encouragement from state authorities, the ones who should be the people most interested in the subject. A number of states in the Union have taken this matter up and legislated upon it in a most intelligent way, and with the present popularity of the movement toward safety, the time is most opportune for legislation on the boiler subject. The necessity for this legislation exists not only for the cause of Safety, but also from a practical viewpoint of the manufacturer and purchaser of boilers.

A number of states and various cities in the country have taken up this matter and legislated upon it. Among the foremost is the City of Philadelphia in this State, which has had a boiler inspection law for upward of twenty years, and by it has largely decreased the

accidents resulting from improper boiler construction and improper inspection and use.

The life of a citizen of Philadelphia is no more dear to him than the life of a citizen in Harrisburg. The United States Government has for years supervised the construction and inspection of marine boilers, so that they have afforded all the protection possible to people who travel by water, and have prevented destruction and loss of property. Why should a man who travels by water have an element of precaution thrown around him when he is on the water that he does not have when he sits in an office building. The Federal Government has also protected the traveler by rail because the Interstate Commerce Commission now drafts certain rules and regulations for boilers on railroads in interstate trade, and yet a large office building that may be totally disrupted by a boiler, and that contains more people than could possibly be put on a passenger train; has no law governing boilers.

Our Commonwealth has been particularly lax in this thing and we are now urging you, from a viewpoint of safety alone, to enact laws which will govern the construction of steam boilers. The other side of the argument is that a man who will purchase a boiler for use in Harrisburg and afterward determines to build his plant in Philadelphia, would not be allowed to install the boiler in Philadelphia. A man who might contract to erect a building and use a hoisting engine, could not use it in Philadelphia, unless it was built to correspond with their laws. A contractor who might undertake a pavement contract would not be allowed to use a road roller in Philadelphia that he might use in Harrisburg, or in any other city in the Commonwealth.

A boiler that could be used in Ohio could not be used in Detroit, and a boiler that could be used in the State of Michigan might not be of use to the city of Detroit, as Detroit has a law protecting its citizens but the State of Michigan has not seen fit to protect its citizens in a similar way.

In this, the position of Michigan is analogous with that of Pennsylvania. From the manufacturers' standpoint, it is desirable to get concurrent legislation throughout the United States so that boilers may be manufactured and shipped into any state in the Union. Not only does this insure a better boiler, but it insures a better boiler at less cost, for as the laws vary, it is necessary for a manufacturer to vary his mode of manufacture and to bring out each boiler as a distinctive operation.

As a matter of fact, this runs up the cost, and delays the shipment and brings great confusion to the manufacturer and brings

delay and increased cost to the user. I fully appreciate the great difficulties that attend the obtaining of concurrent legislation, but in the case of steam boilers, it seems now that this goal is within easy reach.

The American Boiler Makers' Association records of their meetings show that for twenty-five years they have attempted to get a standard specification which they hoped to be able to introduce into the various states and have passed. The National Tubular Boiler Association has been working with the same end in view, for five years, but due to the fact that these Associations have been unable to impress upon the public at large and upon state officials in particular, the necessity of such legislation, they have been able to accomplish very little; but in the last year, in conjunction with the American Society of Mechanical Engineers, wonderful strides have been made.

The American Society of Mechanical Engineers is the foremost mechanical organization in the United States. Enrolled in its membership are the very best engineers in the United States, some six thousand in number. Sometime ago they became interested in this subject and from their members appointed a committee to draw up a standard specification and a standard code of boiler construction that would make the best boiler and eliminate, as far as human endeavor can eliminate, the chances of explosions with the attending disastrous results.

This committee gathered data from corresponding societies and organizations throughout the world. They examined very carefully, the rules for the construction of boilers and all legislation that had been passed on the subject. They called in council with them, the foremost manufacturers in the United States. They called in council with them, the foremost boiler insurance companies in the United States and got the benefit of the Insurance Companies' experience. They consulted with the heads of all departments of insurance companies and particularly with the inspectors and field men.

They then published these rules and circulated them broadcast throughout the world and got the world's best criticisms on them, calling in consultation the representatives of the interests above mentioned. They have now revised their rules, and will have them ready for publication in the very near future.

Permit me to say that, in my opinion, the world's history will fail to show any case of any mechanical subject that has had such careful study and combined in its report the concentration of so much thought, practical experience and wisdom, as this report which is about to be issued by the American Society of Mechanical Engineers.

Please consider carefully elements that have entered into this specification: The Association of American Steel Manufacturers; American Society of Mechanical Engineers; The American Society of Testing Materials; the heads of steam boiler inspection and insurance companies whose sole business is to inspect and insure boilers; the experience of all leading boiler makers in this country; coupled with the above, consultation with the leading societies abroad; and a compilation of the records of construction as recommended by these societies and a record of the construction of the leading manufacturers abroad.

Is it possible to conceive of any subject, in any line of endeavor, ever having had at any time, the thorough working out of this subject of boiler specifications? From my viewpoint and my study, history fails to reveal it. It seems to me that the Commonwealth of Pennsylvania cannot better serve its citizens in any mechanical sciences than by adopting the rules which have resulted from the work of the American Society, and the combination of people which they have called to their assistance.

A number of states in the Union have been awaiting the report of this committee before taking up and adopting rules and regulations for the construction of boilers. We believe that this State has been imbued with this thought from the fact that your engineer has attended a number of meetings. The State of Wisconsin has its rules all written but has delayed its final decision until the report of the American Society is out.

The State of Ohio has had its board of boiler makers attend many of the meetings, and has helped materially in forming the laws. The State of Massachusetts was the first to legislate efficiently on the subject, and their record shows that they have largely reduced the number of deaths and accidents due to boiler explosions. Massachusetts' laws have had seven years of trial, and much that is in them is in the rules of the American Society.

At meetings which the boiler makers have had, we have had the best experts from New York to Seattle, and all the information obtained has been placed before the American Society. From every possible viewpoint, the desirable thing for this State to do, is to be first, if possible, to pass what is bound to be a standard law on the construction and inspection of steam boilers. It is fitting that this great State of Pennsylvania should be the first one to adopt such an important measure and to lead in this great work.

The Chairman: Mr. Durban has very admirably brought out the fact that this is a very important subject. The next on the program is Mr. Clarence C. Perry, of the Hartford Steam Boiler Inspection & Insurance Company, Hartford, Conn.

A UNIFORM BOILER CODE.

CLARENCE C. PERRY, HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CONN.

You have heard Mr. Durban's able paper on the subject of the desirability of a uniform boiler code, and as he states, there are two sides to the question, the first being that of safety and the second, the desirability of uniformity in the prescribed methods of construction. The question of safety is, of course, of prime importance and every other consideration should be made subservient to this.

The Hartford Steam Boiler Inspection and Insurance Company was the first and the only company in this country founded solely on the principle of safety first in boiler construction and operation, and no doubt most of those present know how successful it has been in its forty-seven years of existence. We are heartily in favor of any movement tending towards greater safety in the operation of steam boilers, and believe that state regulation in this respect along the general lines laid down by the Massachusetts and Ohio laws, is good. We believe that several changes, especially in the law of Massachusetts, are necessary to produce the maximum benefit to the steam user of the state, but the general principles of the law are excellent. While in general every boiler owner is trying to make the operation of his boilers safe, the force of law adds to the weight of the inspectors' recommendations and is a great aid in securing necessary changes as recommended.

Closely following in importance the question of safety is the one of economy. It is a duty of the lawmakers of every state to see that as far as is consistent with the question of safety the manufacturer is unhampered by unnecessary laws or rules so that he may compete on an equal footing with the manufacturers in similar lines, located in other states.

To this end, uniform rules based on common sense and guided by practical experience are absolutely necessary. In order to interfere least with the boiler user and gain maximum results as regards safety, the rules adopted by your State should be as nearly uniform with other states as practicable. As Mr. Durban has told you, the boiler makers of the country have been trying for years to reach some understanding in regard to uniform specifications for boilers, but with little success until recently. The A. S. M. E. (American Society

of Mechanical Engineers) have been working on a uniform boiler code for two or three years, and it seems that they have almost arrived at a set of rules that will be acceptable to nearly every state as far as interstate features are concerned. However, in what appears to be the final draft of these rules, there are a number of criticisms that could be made in the interest of the steam user, which our Company would no doubt feel compelled to make if your State should propose to adopt these rules and would permit us to give you the benefit of our experience on the subject.

While the matter of uniformity is one of importance to the boiler manufacturer and the boiler insurance company, the fact should not be lost sight of that the boiler user is the one who will really gain most from the adoption of uniform rules. Every boiler manufacturer and insurance company is in business for the purpose of making a profit just as the boiler user is, and every regulation that tends to make the manufacture and inspection of boilers more expensive, will be surely reflected in the selling price of the manufactured article, so that the consumer (as is always the case) is the one who finally pays the freight.

It is almost needless to state that in the manufacture of boilers, as is the case in every other line of manufacture, variation causes expense and uniformity tends toward economy in production, and at the same time to a better product. So in the interest of the citizens of your State I want to urge you to adopt uniform boiler rules as far as they can be consistently adopted. At the present time, the States of Ohio and Massachusetts have boiler laws that require the inspection of boilers in the shop where they are made, which is perfectly proper. Such inspections are made by regular licensed inspectors who must report to Columbus or to Boston, as the case may be, to be examined as to their qualifications.

Imagine what an expense this would be, to be added to each boiler made, if every state in the Union adopted boiler laws demanding the same procedure regarding the qualification of an inspector. One of the most prominent boiler manufacturers in the country, who is located in your State, would have to secure an inspector who held a license from every state in the Union, in order completely to cover its field of operations. If the laws of all states are made uniform, an inspector who is licensed by one state should be competent to inspect boilers for any state. There is no logical reason why boilers that are safe to operate in the State of Pennsylvania should not be equally safe for operation in any other state in the Union, but unless the laws governing their construction and operation are made uniform, this will not be so.

I trust that you will bear in mind that I have been speaking largely from the mechanical side of this question of uniformity in boiler construction, installation and operation, as that is the side of the insurance work that I more particularly represent. I think I can say, however, from the underwriting standpoint, that it is very desirable to have uniformity in insurance legislation, in policy contracts, in field operation, and even in premium rates for steam boiler insurance. Each state has some form of insurance law governing the steam boiler insurance operation, and while they are not strictly uniform, there are fewer factors to deal with so that lack of uniformity is not so serious as it would be in the regulations concerning boiler construction, the latter requiring a large number of details successfully to govern the manufacture and use of steam boilers.

It is a decided advantage to the boiler insurance to have policy contracts standardized, as they have become in fire insurance. This has been nearly accomplished in the boiler line through the Steam Boiler and Fly-Wheel Service & Information Bureau at New York, which, through its efforts, has succeeded in getting the boiler companies to issue policies with standard provisions, if not standard phraseology. One can imagine the difficulty an assured would be in, in trying to analyze the difference between fire insurance contracts if each company were to issue a separate form of contract, and the same is true in boiler insurance, although there is a smaller number engaged in the business.

Naturally, companies who made no effort to standardize their contracts, would place therein some fancy covering that would really be only talking points, and through slick phraseology might exempt themselves from certain liabilities which the assured supposed he was purchasing, and even the simplest form of insurance contract is not easy for the laymen to interpret. Such standardization would obviate all necessity for comparing policy forms, for when once adopted, it would be like the standard fire policies of today. Except in extraordinary coverages, an assured does not examine his fire insurance contract minutely but only ascertains whether it is a standard form and whether he has the amount of insurance expressed therein that he has ordered, and that it properly applies on his property.

Boiler insurance applies specifically to the property of the assured and protects the assured against legal liability for damage to surrounding property and against legal liability for injuries to persons, both employees and non-employees. The coverage against personal injuries ought to be excluded from steam boiler policies since liability insurance is so generally carried and no reduction is made in a liabil-

ity premium for eliminating boiler hazards. The late compensation acts in many states have greatly reduced the call for personal injury coverage of employees. In some states it is absolutely prohibited; in others, employers of a small number of employees are privileged to insure; in others, employers authorized to carry their own insurance, may insure their boiler hazards; in others states, they cannot.

I am not fully conversant with the compensation states or acts, but I believe that more than twenty states have adopted workmen's compensation acts, and in those states, there has been considerable reduction in eliminating liability for employees' claims. While this has assumed large numbers, the actual reduction in premium has not been very great. I need not tell you that by far the larger part of a boiler insurance company's premium income is consumed in the cost of maintaining the mechanical services which are rendered to its assured. The balance of the premium is consumed in acquisition expenses, general supervision and losses, with a very small balance left for profits.

The exact figures I am not able to give you today, but the two points I want to make on this subject, are these: The average loss ratio is about 10 per cent of the premium income, and of that percentage, about 25 per cent covers claims of employees and non-employees, or about 2½ per cent of the entire premium income, 1½ per cent of which is about the average for employees and 1 per cent for non-employees; so that in making reductions for eliminating employees, a company could not afford to make a greater concession in premium than that which the loss ratio bears to the premium income, and that is the reason that the elimination of employees in boiler contracts does not materially affect the premium income.

Concerning the profits, it may be out of place to mention it here, but it is a serious question whether on an average, the companies clear 5 per cent. The narrow margin on which this business is transacted, has caused several states to require the companies to formulate and file a standard rate of premium and to oblige the companies to quote the rates they have filed, to all insurers who are seeking insurance under like conditions.

The Chairman: Mr. John Monteith, of the Insulators' & Asbestos Workers' Union will be the next speaker.

Mr. John Monteith, Insulators' & Asbestos Workers' Union:

While we are on the discussion of boilers, my organization has instructed me to bring up before this Conference, a danger which we daily confront when working around boilers, a danger that comes from

the safety valves on the tops of the various boilers. These valves blow off very suddenly and without any warning in most cases. Any person who may be in front of them when they go off, is liable to be badly burned by the steam or have his eyes blown out or ruined for life. We know that in ninety-five per cent of the boiler rooms in which we have done work, this danger exists and yet the remedy is very simple. All that is needed is to have the safety valves piped to carry this steam out into the open atmosphere or to a place where it will not endanger anyone. It is not much to talk about but it is a very dangerous thing for a man when working on top of these boilers.

The safety valves are generally pointed to the back. All the work on top of boilers is mostly on the back. A man is working there. His mind is constantly on that safety valve. He does not know when it is going to blow off. If he happens to turn round to get some materials just when it goes off, his face and body exposed to that steam is in danger of being badly burned and scalded. His eyes may be ruined. I think this Commission should take up this matter, as I have seen many hurt by these valves.

The Chairman: I think that is quite an important question in connection with boilers. Does anyone desire to make any remarks about the Uniform Boiler Code or this last question brought up about the safety valves?

Mr. F. H. Willcox, United States Bureau of Mines, Washington, D. C.: In this connection it might be well to incorporate a provision to require doors in the boilers that will not blow down. I do not know whether that has been considered by this committee or not.

The Chairman: That is, boiler doors that open inward instead of outward?

Mr. Willcox: Yes sir.

The Chairman: That is another important consideration in the making of boilers. Many men are burned by the blowing out of the taps.

Are there any further remarks on this subject? If not, we shall go to the next subject on the program which is quite important, not so universal as the boilers but quite important to the steel industry. Mr. F. H. Willcox, United States Bureau of Mines, Washington, D. C. will address us on the subject of "Suggested Regulations for Blast Furnace Operations."

SUGGESTED REGULATIONS FOR BLAST FURNACES.

F. H. WILLCOX, UNITED STATES BUREAU OF MINES, WASHINGTON, D. C.

In working out any system of regulations for an industry, it is necessary to consider the hazard of the occupation, the condition of employment, and the character of labor attracted to the work.

Illustrative of the experience of large companies with labor is this statement of the President of the National Tube Co.: "There has been a marked decrease in the intelligence of these employees (i. e. blast furnace workmen) during the past 12 or 15 years, largely, we believe, because intelligent men did not wish to work 7 days per week, and, therefore, sought employment in other departments." Speaking as an operator of merchant furnaces, Edgar S. Cook says, "The grade of employees in the blast furnace business will average lower in intelligence than in the more advanced form of manufacture, as, for instance, in the finishing mills and steel works. It is only unskilled labor that will continue to work about blast furnaces. These men are trained to do the routine work, so that, while they become semi-skilled, as it were, yet this work calls for little other than so-called common labor. Compared with the number of men employed, the numbers of positions calling for skill and experience, and accompanied by attractive salaries, are few. The men, therefore that develop industry, application and brain power, outgrow their opportunity at the furnace and seek employment where there are better chances of advancement." In this connection it should be stated that the percentage of men earning over $700 per year, is less at blast furnaces than in any other branch of the iron and steel business. At present, the grade of furnace men is unquestionably better than the above statements would indicate; first, because the six-day week has to some extent eliminated from those seeking employment at furnaces, the class of men (foreigners) who desire only the opportunity for maximum work and earnings with the end in view of as quickly as possible acquiring enough money to return to the old country. In the proportion of skilled and unskilled labor, the elimination of a portion of this transitory force is offset by the withdrawal of those experienced men who left furnace work on account of curtailment of earnings; second, as it is stated by an authority on this subject, "with the assistance of modern engineering, the safety campaign has succeeded in making the blast furnace

plant a safe place to work and has exercised a most beneficial effect upon the spirit and progressiveness of blast furnace workers. Great progress has been made in this direction (i.e., betterment of the human element) and the good results obtained in modern furnace practice are in no small measure due to the better spirit and greater intelligence of the worker"; third, the lean year through which the furnace industry has passed, has eliminated from those plants having two or more stacks and yet in operation, a considerable proportion of the floating labor, the older, more efficient and intelligent men being retained. This is, of course, a temporary state of affairs, but it is noteworthy in that to it may be attributed a part of the very noticeable reduction in accidents effected during the current year. With resumption of capacity operation, there must be a taking on of unskilled inexperienced hands, and it may be expected that the grade of men employed will again adjust itself to the comparative wage scale and conditions of work.

The second condition to be noted is the irregularity of employment. The maximum changes in daily production over an eight year period are:

	Average Daily Production.	Monthly Average.
1907	35,000 tons	decrease
1908	22,000 tons	increase
1909	27,000 tons	increase
1910	28,000 tons	decrease
1911	13,000 tons	increase
1912	25,000 tons	increase
1913	26,000 tons	decrease

The 1910 census-takers give an average daily production, per man employed, of 1.8 tons pig iron. At present it is probably near 2.5 tons. The significance of the tonnage fluctuation appears when we convert tonnage to employees, and taking two tons as an average for the period, we have:

1907,	17,500 men discharged
1908,	11,000 men hired
1909,	13,500 men hired
1910,	14,000 men discharged
1911,	6,500 men hired
1912,	12,500 men hired
1913,	13,000 men discharged

While strict adherence to these figures would be very misleading, they indicate a very probable fluctuation of from ten to thirty-three per cent in the men employed at furnaces from year to year. This condition is existent throughout each year, the average daily production by months during the last three years showing variations of from 1,000 to 10,000 tons daily production from month to month. The conclusion is irresistible that there is a continuous shifting of force, both from plant to plant and from occupation to occupation. The

handicap to the safety, carefulness, experience, foresight and "plant sense" of the crew must be apparent to all familiar with handling of labor.

The third item of importance to be emphasized is the character of the hazard in furnace work. This may be classed in four groups: (A) Hand labor, i.e., loading, unloading piling, clean-up, etc; (B) Mechanical and electrical; (C) Transportation; (D) Metallurgical, or purely furnace hazard. Aside from stating that the accidents and causes of accidents occuring in the work comprised in the first three classes are not widely different from those occuring in other industries under similar classification, this paper cannot take up a detailed discussion of them, other than to point out that the hazard of many employees in occupations about the furnace, distinct from furnace work, is increased by the chance of being involved in an accident having its origin in a metallurgical operation. Similarly, those factors of (1) proportion of those of recent immigration in the work, (2) percentage leaving employment during the year for personal reasons, etc., are not significantly different from similar factors in other lines of industry, and are of note only when they are considered in connection with the ability of the crew to foresee and get out of the road of occasional abnormal occurrences about furnace plants.

Metallurgical or furnace accidents may be considered to comprise:

(a) Asphyxiating gas.
(b) Burns or other injury from handling hot metal, slag, flue dust and gas.
(c) Explosions of metal, slag and gas.
(d) Furnace slips.
(e) Breakouts.
(f) Injury from machines, typical of and largely limited to furnace operation: Pig casting machines, iron breakers, ladles, skips, scale or larry cars, ore bridges and car dumpers, gas washers, gas engines, blowing engines.

Many injuries from these causes are accidental in the most literal sense but it would be less than frank not to state that this very condition has at times been productive of a tendency to accept many others as a trade hazard, in exactly the same way that inexperience, thoughtlessness and ignorance of a part of the force have been accepted as a corollary of the character of the men it has been necessary to employ. Exactly as it is possible and profitable to attack the latter problem, so it is possible to eliminate many causes of metallurgical accident. There is no lack of incentive in this work; many of

these accidents are of a terrific plant-wrecking character, and the managements have always been vitally concerned in their prevention, and in regard to the less spectacular accidents which will comprise probably ninety-five per cent of the pure furnace hazard, everyone is, or soon will be, fully awake to the economic and humane reasons for eliminating them.

Let us consider that men about furnaces are not of the highest paid grade; that new men are constantly being added to the force, both in normal operation and by reason of fluctuating production, and that these men are exposed not only to the average industrial hazards, but also to an added danger peculiar to handling hot molten metals and slag, hot poisonous and explosive gas, work with novel machinery and at elevations, to the probability of more or less heavy slips, and finally to the ever-present, if remote, possibility of breakouts, explosions or asphyxiation. From these things, it becomes apparent that the fundamental idea toward which regulation, if we are to have regulations, should aim, ought to be a detailed and explicit statement of features of construction, operation and practice, to include first of all and most essential on account of the grade of workers, every practicable safeguard and every method of practice that can be reasonably insisted upon. Such a program looks somewhat stupendous, but it is really not as formidable as it looks at first glance. It is only to be kept in mind that there are certain operations, which must always be left to the management, which require instant decision as the occasion arises, and it will be found that a large proportion of the work consists in routine operations amendable to rulings. The experience of large corporations confirms this. The layout of one furnace, or two or more furnace plants, is essentially the same, and it is not more difficult to state ideal conditions to which forty blast furnace plants shall find it reasonable, possible and profitable eventually to conform than it should be for forty machine shops, saw mills, or woolen mills.

In presenting the following suggestions for regulations, it is desired only to point out the field; to indicate the possible scope, and to emphasize that, while safeguarding should be carried out to the fullest extent, the State, in so far as it is able to do so, should insist upon certain methods of practice. While this is unnecessary to add, in view of the advice from representatives sought by the Pennsylvania Department of Labor and Industry, it should not be neglected to state that it will prove both futile and dangerous to lay down regulations until study in the field and consultation with operating men and those experienced in accident prevention in the industry, has been carried out very fully.

In this connection I should say that it is not the function of the Bureau of Mines to state what any operator must do. It is its duty to point out what any operator may do, or to co-operate with state bureaus in making conditions of employment more safe. In stating outlines for regulations, the ideas are advanced as personal ideas, convictions, and not as the official statement of the Bureau.

Asphyxiation.

Location of hazard: Work about the bosh, bustle pipe, mantle, jacket or shell, and furnace top. Cleaning or repairing gas or blast mains, dust catchers, downcomers, water-seal valves or chimney flues. Work inside gas washers, stoves or boiler settings. Work in connection with goggle, sand or damper valves or sewers. Repairs to stock (stack) line. Buildings in which gas handling equipment is housed.

Requirements for safeguards.

Thoroughly railed platforms at all elevated places where it is necessary to work in proximity to furnace gas. Gates or automatic warning at approach to hazardous places of work. Locking devices for operating valves, levers, or switches on bells, boilers, stoves or gas washers. Approved design of water seal valves. Use of mechanical stop valve in addition to water seal valve when work is necessary on mains in proximity to operating furnace. Methods of drafting out gas flues and testing for gas before working on them. Size and spacing of man holes in gas mains. Provision of oxygen helmets. Means of summoning help to furnace top. Safe practices to be insisted upon.

Watcher to accompany those working in gassy air. Use of belt and life line where of benefit in case of asphyxiation. Provision of lines where there is probability of its being necessary for rescue man to enter hazardous place. Inspection of valves at boilers, stoves and washers before men start work inside. Continual safe working supervision in hazardous work.

Hot metal slag, flue dust and flame.

Location of hazard: Under notch, under fall and runner to ladles, granulating pit, or bed. Dumping ladles or forking cinders. Botting the monkey. Opening and stopping tap hole. Skimming, opening skimmer gate and punch-out. Operating gates or throwing shutters. Transportation. Pouring. Cleaning kish and scrap from ladles.

Pumping dust catcher, cleaning up or repairs under dust catcher, down legs, dust pockets and in mains or stoves. Unloading flue dust. Lighting gas at boilers, stoves, top runners, ladles, changing bronze. Flarebacks from dirty or cold stoves, or from stoves or boilers at skips.

Safe Guards.

Safe means of opening and closing tap hole and under notch. Design and use of shields for use at punch out, shutters, skimmers, etc. Provision of goggles, masks. Question of feasibility of railings along runners or walks over runners. Operation of gates. Means of exit. Protection against flying coke, flame, slag, etc., from tap hole. Problem of bursting tuyeres. Permissible eye protection. Rules for transportation of hot metal and slag. Protection for pourers and trough men at pig machine. Equipment of ladles to prevent overturning.

Means of dumping and wetting down flue dust. Carding of flue dust cars and unloading at dump trestle or sintering plant.

Safe Practices.

The field for work in promoting safe practice extends infinitely. I question whether the State can expect any attempt at defining and authorizing certain practices as safe and permissible to be attended with instant success, because having laid down an elaborate set of rules for this work, it will be found that accidents will continue to happen in the most unexpected manner. It will probably be found a question of development during some years. The possibilities are at any rate too wide to discuss adequately at this time.

Explosions.

Metal and slag are liable to explosion at any point from furnace to destination, while still in a molten condition. The explosion may occur from boils in the runners or beds, explosions in the ladles, shots from damp or cold pig moulds, and from metal or ladle cleanings coming in contact with damp earth. Mechanical safeguards should be provided where there is a certainty of there being an occasional shot. For the most part, however, the location of the hazard, aside from pig machine moulds, shutters, skimmer gates and tap hole, depends upon care in drying tools, gates, troughs, selection of sand and carefulness. Certain practices should be forbidden, such as putting the cold, wet gun nozzle into the tap hole against a stream of iron, leaving large pieces of cold scrap in the runners, putting cold scrap into the ladles, throwing wet rubbish into cinder

ladles, etc. Insistence upon personal inspection by the foreman in charge before casting or pouring, will unquestionably obviate many of these accidents. Explosions of gas are somewhat common, but for the most part they are only "shots" or "cracks" at the burners or top. Occasionally they unseat a burner or open an explosion door. Cases of explosion of plant wrecking character come rarely, but any furnace operator can recall several instances within the last few years, and many explosions resulting in no loss of life do not become generally known. Occasions of hazard are in blowing in, in blowing out, when attempting to draft out the mains, dust catcher and furnace, by putting too much water in the furnace, and in stops when the mains become filled by accident, neglect or necessity with a gas-air mixture.

Safeguards.

Dangerous situations often arise suddenly, and can be met only by experience, coolness and common sense. The use of steam to mix with a gas-air mixture has been attended with explosions and is attended with success only when it is used with understanding, and considerably in advance of the danger point.

Blast main explosions cannot occur, supposedly, if the blowing engines are turning over. Unfortunately, when they do occur, they usually leave no evidence behind. It should be a legitimate field to consider the use of automatic check valves on the hot blast main, at hot blast valves, mixer pipes and the engines; also the use of steam to flood the cold blast main, should it catch on fire or the engine stall.

For these classes of explosion the best means of prevention might be a compilation of methods of practice which have or have not been attended with success. Operating men would welcome such information and it would unquestionably be of greater service than regulations.

Breakouts.

Breakouts above the mantle are extremely rare. Bosh breakouts occur at long intervals, as do those at the tuyere breast. Hearth breakouts are still a possibility of not infrequent occurrence.

Aside from the draining of the hearth and clean up, no injury to life or limb usually results from hearth breakouts, provided the metal does not come in contact with water or damp sand, brush or rubbish. It may prove feasible, after investigation, to urge elimination of wells or ditches about the hearth packet.

Furnace slips.

Slips vary in violence from "rolls" to slips of explosive violence. No furnace man wants them. The more regular his operations, the less slipping, the more uniform his grade of iron, and, as a rule, the greater the production. He may be relied upon to eliminate slips by every device and practice known.

Safeguards.

The provision of means of quick exit from the furnace top other than down the skip incline. A shelter on top for refuge. Covering over bell cylinders, sheave wheels, etc. Substantial fire-proof ropes on crane operator cabs, cast houses, winches in proximity to furnaces. Warning whistles to enable foremen or bell operator to give timely notice to yards, trestle and stove-cleaning men of an impending slip. Provision of shield in front of explosion doors which throw material toward locations in frequent use, i. e., trestles, gates, roadways. Insistence upon safety bleeders in new construction or where furnace shells are of sufficient strength to warrant their use.

Safe Practices.

Rule that a furnace shall be given one or more checks or, if necessary, be taken off, when men are working in hazardous places, difficult of escape, and in range of material from a slip, near bleeders, explosion doors, on top or outrigging, on roofs or top, cleaning doors of stoves, on top of mains, etc.

Typical furnace machine and machinery.

These machines deserve separate treatment when rules for mechanical and electrical hazards are being considered. The general treatment of these hazards will most adequately cover these machines, aside from a few specific additions or alterations to make the general rule fit the furnace application of the machine.

The same idea applies to those operations comprised in hand labor, mechanical, electrical and transportation hazards. They are very important. They comprise probably 70 per cent of accidents about furnace plants. In general, the advice of men devoting themselves to these lines, should produce rulings applicable, with little change or additions, to furnace operations.

A final word would be again to state the importance of bearing in mind that the men we have got to protect are not the highest paid, most intelligent grade of men; that the hazards we have got to consider are most varied, ranging from the most elementary accident

to the most involved type of a technical nature; and, in conclusion, to emphasize the importance, as I see it, of developing a very definite, comprehensive ruling for every point covered.

The Chairman: Mr. Willcox has very well shown us the enormous possibilities of accident around the blast furnace. I just wonder whether he has missed any; and he has also given us some very valuable suggestions. We shall throw the matter open for general discussion. Does anyone care to make any remarks?

Mr. R. W. Robinson, Inspector, Ocean Accident & Guarantee Corporation, Ltd., Philadelphia: I should like to ask the last speaker a question in reference to mechanical devices in the handling of molten metal. Does he consider it necessary to have the ladles locked and worm gears covered?

Mr. Willcox: I did not mention that specifically but I mentioned provisions to prevent them from overturning.

Mr. R. W. Robinson: I understood you to say it was material.

Mr. Willcox: I don't believe I made that statement. About ladles overturning on damp ground, a safeguard would be a very good thing. I think what I had in mind was safeguards along the runners or about the tap holes; that is where you might have a damp spot. But I don't think it would be a good thing to have a safeguard unless there was a certainty of an occasional shot.

Mr. Robinson: The cranes and ladles should be safeguarded?

Mr. Willcox: Certainly.

Mr. J. B. Ayers, Superintendent of Safety, National Tube Company, McKeesport, Pa.:

I remember the time when the operation of the blast furnace was not a hazardous occupation and likewise I have seen it become a very hazardous occupation. In analyzing the various operations of the plants that control the raw material in all its processes till it becomes the finished product, I have seen the blast furnace region, one of the most prolific of injuries of one character or another, either fatal, serious or casual; and have since then seen, by the careful, operating of the furnace and the introduction of the mechanical devices that remove the operator from the more hazardous zones and have also protected him in those zones that are still hazardous, that the danger has been very much reduced. But then there are certain things pertaining to the operations that we cannot foresee, and it just comes to my mind, the case of two of our engineering department escorting a body of students through the plant. As they were passing the blast furnace, the tuyeres blew out and one of the gentlemen was injured. He was not an operator; he was the casual visitor. Now these things come and these accidents we have to contend with

and we aim to meet them just as in the administration of the business affairs, by using our foresight. So in the operation of our machinery, we use our best judgment. In spite of that there are failures of protection. But I would not discourage at all the idea of using every available means and every possible knowledge for the prevention of either failures in the protection of the plant or failure to protect those who operate it.

I haven't anything to suggest with regard to the operation of the blast furnace any more than to sustain the many suggestions we have been offered, all with the view to making it better for both man and master.

The Chairman: If there are no further remarks, we shall now pass to the next subject, "Proposed Electrical Code," by Dr. E. B. Rosa, Bureau of Standards, Washington, D. C., whom I now have the pleasure of introducing to you.

PROPOSED ELECTRICAL CODE.

DR. E. B. ROSA, BUREAU OF STANDARDS, WASHINGTON, D. C.

The attention of the Bureau of Standards was drawn several years ago to the need of a thorough investigation of the subject of Life Hazard in Electrical Practice. For many years the Underwriters' rules had been in use and had exerted a powerful influence toward securing better electrical construction and reducing the fire hazard, but little account was taken of the equally important life hazard in these rules. It was evident that the preparation of such rules in a form that would be at once adequate and satisfactory would be no easy task. They should include rules for employees and, what would be even more difficult to formulate and secure agreement upon, construction rules for stations, lines and apparatus. It was thought that the Bureau of Standards occupied a favorable position for such an undertaking, however, and we therefore asked Congress two years ago for a special appropriation to enable the work to be done. The appropriation became available July 1, 1913, and the work was begun at once. A few weeks before this, at the request of the Secretary of the National Electric Light Association, I presented to that Association a short account of the work we proposed to do, and I should like to repeat here a portion of the outline then given of the preliminary plans for the proposed investigation.

"The general plan to be followed will be the same as that followed in other similar investigations by the Bureau of Standards, namely,

to secure the advice and co-operation of those who are best prepared to give valuable assistance and counsel, and then after gathering together a large amount of information and the experience of the managers and employees of electrical operating companies, the manufacturers of electrical apparatus, and others, to prepare a comprehensive report on the subject. Following that, or as a part of such report, we shall expect to prepare a statement or a set of rules for the guidance of managers of operating and constructing companies, which shall embody what is believed to be the best practice in electrical construction as regards the safe-guarding of human life, and a second set of rules or instructions for the guidance of employees for their own protection. In formulating such rules, we shall expect to utilize the best experience and judgment in the electrical industry. It is also hoped to formulate rules in co-operation with state commissions and other representatives of the public in such form that they could be adopted by such commissions or by city councils, to insure, as far as possible, that electrical companies conform to the best practice with respect to the safeguarding of human life.

"The need for taking greater care of human life in the industries and in public utilities cannot be questioned. The number of persons killed and injured annually in railroad and other forms of transportation, and in factories and in the various industries, is appalling. There is no country in the world where human life should be regarded as more valuable, where there is more to live for or where the rewards of labor are higher. Considering the average intelligence of workmen, the genius and resourcefulness of inventors and manufacturers, and the abundance of capital available to cover the additional investment involved, there is no country in the world where safety devices should be more generally or more successfully employed, or where employees and the public should be more eager to be protected. And yet the number of serious and fatal accidents seems to show that there is great need of education both of managers and employees, as well as the public, concerning the necessity for greater care against accidents, and the folly of taking needless and fruitless risks. The use of electricity is constantly increasing, and the high potential transmission and distribution of electricity is increasing in more rapid ratio than the total use of electricity increases. It is not only the duty of electrical companies to do all they can to reduce the life hazard in electrical work, but it will be to their material advantage to do so. Legislation soon will compel unwilling observance of strict and possibly drastic rules unless voluntary action forestalls such need and renders the observance of reasonable

and wisely drawn requirements free from embarrassment. And if there are to be rules or requirements, it is far better that they be drawn up after a thorough and impartial investigation, with the co-operation of those most experienced and most interested, rather than that they should be drawn up independently by a large number of legislative bodies, each acting on different advice and experience, and together causing a great confusion of requirements.

"The electrical industries consist in very large measure of public utilities, and as such they are coming more and more under the regulation of public service commissions, both as to service requirements and rates for service. More and more the rates that are charged will be based on the actual and necessary cost of the service rendered. If, therefore, the better construction and more effective safety devices and greater precaution required in reducing the life hazard, involve a slightly higher average cost for electrical service; the increased cost will fall upon the users rather than upon the producers of electric service. The public therefore has a right to demand as full a measure of protection as it is practicable to give, and it is the purpose of the proposed investigation to study the various aspects of the problem and to contribute something toward its solution.

"We do not wish to imply that the subject is new, or that little has been done before. Quite the contrary is, of course, the fact. But we do feel that there is great opportunity for further work. We shall take up the study in the spirit of investigators, appealing both to experiment and experience, and shall ask you for the results of your extended experience along the various lines of investigation.

"The Bureau of Standards will be very glad indeed to have the official co-operation of this Association, as well as the assistance of its individual members, both in planning the work and in carrying it out."

This was said a year ago last June at the annual convention of the N. E. L. A.(National Electric Light Association) at Chicago, and it was received with much favor. The Association promised its support and also appointed an accident committee of its own to study the subject, and asked the Bureau to co-operate with them, which we have done.

In accordance with the plan just outlined, we began by studying all that had been done on the subject to date, both in Europe and America. We collected all the books of rules that have been issued by the operating and manufacturing companies, and all the official regulations that have been put into effect anywhere, so far as we could learn of them. We conferred with some of the state commissions, with committees of engineering societies, and the National

Association of Municipal Electricians, the International Brotherhood of Electrical Workers, the Workman's Compensation Service Bureau, the National Fire Protection Association, the Underwriters' Laboratories, and with a large number of engineers and superintendents of light and power plants. We studied accident reports and gathered information as to the causes of accidents. Meantime we were preparing the first drafts of four sets of safety rules, as follows:

1. *Stations:* for Generating and Sub-stations, including private plants.
2. *Lines:* for Overhead and Underground line construction.
3. *Utilization:* applying to Apparatus and Equipment employed in the utilization of Electricity.
4. *Operation:* operating Rules for employers and employees, for stations and lines.

The operation rules for employers and employees were issued as Circular 49 some months ago, and we shall shortly issue a revised edition with many minor improvements. The preparation of the other sets of rules is now well advanced, but it will be some weeks before any of them will be ready for publication.

It is expected that each set of rules will be accompanied by notes which in some cases will explain and justify the rules, and in other cases amplify the meaning or qualify the application of the rules. To keep the rules as simple and concise as possible, exceptional cases where the rules do not apply have generally not been enumerated in them, but will be mentioned in the notes. Also, the notes will suggest reasons for certain rules which to some people might appear unnecessary.

It is intended to secure the criticism of these rules by a large number of competent engineers and superintendents, as well as workmen and inspectors, and revise them carefully before publication. Much of this conference work has already been done, and valuable suggestions received. After their publication, the study of the subject will be continued permanently so that they may be revised as often as once in two years and so kept up to date on all questions of construction and operation.

Especial attention will be given to securing the co-operation of manufacturers, to the end of securing improvements in the quality of materials employed and the design and construction of machinery, apparatus, and fittings employed in electrical construction. The Bureau has been co-operating with the Underwriters' Laboratories in this work for some time.

These four sets of rules form a code of electrical safety rules, which will be supplemented by the Underwriters' rules, in the next revision of which, the Bureau of Standards will co-operate with the electrical committee of the National Fire Association.

It is believed that the Bureau of Standards occupies a peculiarly favorable position to undertake the preparation of such a code. With an able and experienced staff of engineers who will devote their whole time to the work, and who can personally keep in touch with the electrical industries all over the country by frequent visits to manufacturing plants and operating stations, as well as by attending the meetings of engineering societies and their technical committees, and conferring with operators, inspectors, workmen, and the representatives of state commissions it is believed that we can obtain a broader and more unbiased view than any body of men who must administer or who are required to comply with such rules. The Bureau's attitude is always that of seeking information. If we do not understand practical conditions in any given case, we welcome advice and information from those who have first hand information to give. Some of our engineers themselves had years of practical experience, and can fully appreciate and thoroughly sympathize with the difficulties encountered in complying with such rules.

The Bureau sent out some months ago, to a large number of operating companies, copies of Circular 49 and invited criticism and suggestions for use in a revised edition which we announced would be issued at an early date. We have received many very favorable comments, and a considerable number of companies have already adopted the rules. We have also received many valuable suggestions, which have already been incorporated in the copy for the new edition.

As you will readily see, there is a close relation between the Underwriters' Electrical Code and the Bureau of Standards' Code of Safety Rules for Electrical Practice. One of the provisions of the safety code is that the Underwriters' rules are adopted in so far as they do not conflict with any of the safety rules. So far, we know of no such conflict. The subject of fittings and materials is being handled by the Underwriters' Laboratories (with the co-operation of the Bureau of Standards) and many feel that the section on fittings and materials might for that reason be omitted advantageously from the code. If this were done, there will remain in the code, a long section on interior wiring and short sections on stations, lines, signalling systems and marine work. Perhaps the committee would be willing to omit

also the rules on outside wiring, which are relatively unimportant from a fire hazard standpoint (and which, for lack of support, have not been kept up to date and are now practically ineffective) and adopt instead, the much more complete treatment of that subject in the Bureau of Standards' rules. If this were done, the two sets of rules, the Fire code and the Safety Code, would supplement each other. It is even possible that they might be printed in the same book by the National Board of Fire Underwriters for the use of municipal inspectors who will require both sets of rules in their inspection work, although, of course, the safety code would be published separately for use in accident prevention work.

It will readily be seen how important it is that the states adopt electrical safety rules that are uniform. Manufacturers supply apparatus to all the states, and operators are very often interested in electrical companies located in more than one state; employees very frequently pass from one state to another. If there is no such thing as a standard safety code, and different rules and requirements apply in different states, it will be much harder for all concerned to comply with the rules in force, and accident prevention will suffer in consequence. If, however, a standard set of safety rules is prepared which is as good as can be made, it is not only better but also easier and simpler for all the states to adopt the same code than for each to make its own. This is not only true in the first instance, but quite as much so with regard to subsequent revisions, for a satisfactory set of safety rules will not remain satisfactory unless the rules are revised from time to time to keep them abreast of standard practice.

The Bureau of Standards has spent and will continue to spend a great deal of effort to have this code as nearly adequate and satisfactory as may be, and will welcome the closest possible co-operation from the state industrial commissions of Pennsylvania, New York, Wisconsin, California, and any other states that are considering the question. If any of these states will delegate an experienced engineer to come to Washington and work with us on the completion of the code of rules, to the end that when finished they will be more likely to be satisfactory to the several states, we shall welcome such assistance and co-operation. Or, if there is any other method of co-operation that will yield better results, we shall be glad to have it suggested. What we are striving for, is the best possible results, and we are glad of an opportunity to present to-day this brief account of our work and to invite your advice and assistance in securing at an early date, an adequate and satisfactory Standard Code of Safety Rules for Electrical Practice.

I have here a copy of the rules so far as they have been developed, together with some of the rules that have been taken out or newly proposed. In this folder is the manuscript of the complete code as it is now, but as I have stated, it is not yet ready for publication. We have so far issued one part, the operating rules, in circular form, which was stated to be preliminary when issued. This needed considerable revising and republishing, and we shall very likely soon have a third edition.

These rules have been subjected, I suppose, to more criticism and discussion than any other set of rules proposed, but have not been used for any great length of time. We have sent them out to more than one or two thousand operating companies of different kinds, have invited them to criticize and have hundreds of letters; and our engineers have gone to, and conferred with, a very large number of the most competent and most experienced and most practical people there are. It is impossible, of course, for anybody to prepare a set of safety rules on any subject that will get everybody's unqualified approval and endorsement. Conditions vary so much that one set of rules will not be satisfactory everywhere. The aim is to make them general and applicable almost everywhere, with the understanding, of course, that any company may add rules not contained in this set and ignore rules not applicable to their particular conditions, and it is the aim to have a general code of safety rules as well as the safety fire code of the Underwriters' rules.

I should like to say, in closing, just a word on other conditions. In speaking of the Bureau of Standards' rules, all I mean is, that the Bureau of Standards has been doing the work of consulting a great number of people and assembling the information and editing the data. We do not claim to have any superior knowledge that will enable us to prepare better rules than anybody else, but we claim to have a great deal of industry and interest and men who will devote their whole time to it and it is thus possible to maintain a better set of rules than we can get for general practice if every State prepared its own, and also possible to avoid the conflict of rules thus prepared.

The Chairman: I think we all agree with Dr. Rosa that there is a demand for rules and standards for electrical work and especially for those prepared by the Bureau of Standards in the way that Dr. Rosa has outlined. One very good thing about it is, that they are going to put it in plain English so that most of us, who are not electrical engineers, can at least understand a part of it.

Mr. H. H. Cannon, Engineer, Workmen's Compensation Service Bureau, New York City:

I should just like to emphasize what Dr. Rosa has said about needless duplication of work in getting up the standards. As the representative of the insurance companies I want to say, we have been getting up standards for our use and we have been in close touch with the Bureau of Standards and are working in very close harmony with them at this time; nevertheless, we cannot both have exactly the same standards because the Bureau of Standards—the standards which they propose, will go beyond what we shall be able to use in the field. We, however, endorse all that they have done and believe that their work will, in a measure, supplement ours and that, between the two interests, the entire field should be covered.

The various states could very much better put their efforts into the making of standards for other industries which as yet have not been touched. There are so many industries, as we in the insurance business know, where nothing has been done in the way of safety work; and we feel that the various states going into this work and practically duplicating the work that we have already done, or that has been done by someone else and perhaps changed a little here and a little there, brings a conflict between the various states. As these standards will become laws, they will have to be enforced and wherever they conflict with other standards, the other standards will necessarily take second place. Now it may be that the standards of the Bureau of Standards of Washington or of the Workmen's Compensation Bureau, or of anyone else who gets standards up, will vary a little. We cannot get any two men, let alone any body of men, to agree exactly on standards. However, it seems that the difference will be so small and unimportant that we could well afford to give and take, here and there, to have them all uniform. I know that the Bureau of Standards is open to conviction and I know that we are open to conviction. If there is anything, if there is any way in which our standards can be improved, we are only too glad to hear it. We do not think, by any means, that we acquired all the knowledge on the subject, and we do not think when our standards are established that they will be the last word. We shall probably revise them in a year or sooner if we have the time; so it seems to us that if the states and others who are interested in this, would collaborate with the Bureau of Standards and with us, a great deal of dissolute effort would be saved.

The Chairman: Are there any further remarks?

Mr. C. B. Auel, Director of Standards, Processes and Materials, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa:

The lack of standardization in all lines in this country is notorious and, personally, I think it perhaps has more to do with the high cost of living than any other single item. One has but to look around to note this lack of standardization. It is apparent in the architecture of our city, in the wearing apparel, particularly women's apparel, in the length even of our street car track. This last item should have long since been standardized, and yet you find car tracks varying from four feet, eight and one-half inches to five feet, two inches and a fraction, and sometimes both standards exist in a single city. Nevertheless, as the weather man frequently says, there is a little leak in sight. The safety movement has been given a decided impetus on all sides in the past two years and properly so, but I am afraid we are putting so much fly wheel speed into it that we shall not be prepared to cope with the situation. For example, in Europe there are no less than twenty-two organizations of safety at the present time, all doing more or less the same work. There is some semblance of excuse for this on the question of dissimilarity of language. In America we already have two sets of organizations, the American Museum of Safety and the National Council for Industrial Safety; and in addition I understand there is one contemplated for Washington, another for New York and another for Chicago and one for California. In our own works we have had at times no less than six hundred laws and instructions going through a single department, that our inspectors are compelled to observe, practically to learn by heart, in order that we may meet the various requirements not only of our individual customers but of the government. If a piece of electrical apparatus is headed for Massachusetts, it must meet certain requirements; if the Navy Department, it must meet certain other requirements. You can readily understand how burdensome this sort of thing must be; and in spite of the best efforts that we can put forth to cope with the situation, we are occasionally bound to slip.

In the analysis of the accidents in our own works, we found that three-tenths of one per cent were caused by the lack of safeguards, while twenty-nine per cent were due to carelessness or the lack of caution on the part of our employees; so that we are gathered together at a conference of this kind to discuss, if you please, similar phases of the safety problems and we are neglecting the larger side of it. Bearing this out, we had an expert visit our plant and make recommendations as to what safeguards we should put in the shop. In going over his report, however, which would involve the expendi-

ture of many thousands of dollars, we found that had we followed out his recommendations last year, we should not have reduced our accidents by a single one.

The "Proposed Electric Code" which is being discussed in Pennsylvania, may or may not be different from those already adopted in other States and I should like to obtain information from Doctor Rosa, or anyone else competent to speak, what position this particular code will occupy with relation to the code already or the rules already established by the Bureau of Standards or those already established by the National Board of Fire Underwriters or by the American Institute of Electrical Engineers. If we are going to have independence, all over this country, in the matter of standards, the last condition would be worse than the first and I want, by all means, to advocate a uniform code in the electric line like the one that has been advocated in the mechanical line this morning.

The Chairman: Are there any further remarks?

Mr. D. Newhall, Vice-President, George M. Newhall Engineering Company, Philadelphia:

The National Electric Code we all know today is not an insurance regulation. It is promulgated by the National Fire Protective Association, and on the electric committee are representatives from all electric industries. In the early compilation of the code, the art was very crude. The original code had about thirty sections. The proposition made by Dr. Rosa towards standardizing the code in the various states will certainly be a movement that will be very beneficial to all interested. Many attempts to formulate a code that would be standard, have been made but because of the indifference of the electrical industry, these have been unsuccessful. There are many things which theoretically are safe but are practically quite hazardous; as, for instance, I can still install electric installations which electrically would be ideal, but there may be surroundings as in a garage or in the use of any device that would cause an arc in the neighborhood of inflammable or explosive material, and make trouble; yet electrically the conditions might be ideal.

In the formulation of codes, nevertheless, they do not go enough into detail. The mechanics in making these installations are not advised as to the hazards. There is no means today of educating the mechanic. He may attend a school and get a certain amount of theoretical knowledge at night, but his instructors do not seem to give him the information that is really of great value to him in making installations. Philadelphia, as far as I know, is the only city in the Union that has what is known as electric schools at which the working mechanics and laborers meet once a month and take up problems of this character.

It is also well to consider, in making a standard code, that an installation on the exterior in the State of Arkansas would not be proper in the State of Pennsylvania and certainly would not be, in the State of Louisiana, due to climatic conditions.

Touching the point of carrying off gases from underground ducts, we had a great deal of trouble in Philadelphia a number of years ago from that source. There is very little of it now. The methods of connecting cables are far different. Formerly they were connected by means of set screws that loosened up, a small arc was established and blew the manhole cover off. It has been suggested that the gas could be readily carried off by connecting the duct from the manhole to the nearest dead flue in the neighborhood.

The Chairman: Are there any further remarks?

Mr. Britton, Philadelphia:

As the representative of an electric utility, I should say that the proposition of a set of safety rules should have the authority of the law behind it. The rules, as compiled up to date by the committee, are probably not ready for open criticism.

Dr. Rosa stated that the public had the right to demand as full measure of protection as possible, and I think we all concede that; but the public has got to be educated how to protect itself, in a large measure, and means have got to be provided to enforce that protection where it is not voluntarily done. A great many of the accidents, electrical accidents, to the public, are due entirely to the condition of their own equipment. The company furnishing the current, cannot in any sense be considered responsible for many of those accidents and are not in position to employ preventive measures. You can in certain instances make recommendations to a certain class of customers, which will be accepted in the spirit in which made, and arrangements for the prompt removal, of the defect in the equipment will be made; in other cases, a suggestion of that kind is looked on as interference and in some cases as sheer impertinence.

I should just like to make one more plea for uniformity in these rules, even in spite of climatic conditions which I think apply more to fire hazards than to life. There are many such garage companies that operate in one, two or three states and it would be a difficult matter, as one gentleman pointed out, if these recommendations are piled on recommendation until it becomes a difficult matter to comply with all of them, not only for the fire insurance company, for the separate industries, but for the electrical contractors who frequently do business through several states, as well as for the manufacturers.

Mr. A. P. Way, Electrical Engineer, American Railways Co., Philadelphia:

Representing a concern interested in electric light and railway industries in a number of states, I wish to add a suggestion, not necessarily criticism but rather encouragement to the bodies drawing up rules and regulations, rules for standardization particularly. We have at the present time exceeding confusion. We try to conform to these rules of the different states. It has come to the point of disgust. I would therefore suggest that these gentlemen upon whom this responsibility rests, should consider as much as possible the viewpoint of the utility as well as that of the employee. The utility is in business primarily for making money; at the same time it cannot disregard the services by any means, but it welcomes any rules and regulations.

I think it is the best plan, from the standpoint of such a company as ours, operating in different states, that a central body be given power to draw up a set of rules and our state committees or bodies, doing the same under the authority of the state, should co-operate with them so there should be a standard. It would be very much appreciated by us.

Dr. Rosa made the comment that the cost of compliance with such rules for safety should be met, possibly, if by no other means, by an increase of revenue. That would be hard, the public would not stand for that; nevertheless the utilities have a great many burdens upon their shoulders now. The rates of service vary considerably and no doubt they depend a great deal on the capitalization. Now that should be taken into consideration also. I therefore wish directly to draw attention of the state bodies that they try to be as generous and broad-minded as possible in drawing up these rules, that they shall not be influenced too strongly by single instances in drawing general conclusions and general rules.

The Chairman: I think your suggestion of the different state bodies and the Bureau of Standards co-operating with each other on this subject, is very good. I think they are doing it more and more and that is the object of meetings of this kind. I think that Dr. Rosa said that these proposed rules were sent to companies and individuals throughout the country for recommendations and criticisms. Is that true, Dr. Rosa?

Dr. Rosa: Yes sir.

The Chairman: I think, therefore, that you would have opportunity to make objection to any rule that was not just satisfactory to you. Is there any further discussion on this subject?

Dr. Rosa: Mr. Chairman, there were one or two questions addressed to me which I shall undertake to answer.

The first is the question, "What is the relation of this code of the Bureau of Standards to such rules as those of the American Institute of Electrical Engineers and other engineering associations?" I can say that we have specified in these rules, at certain places, that the requirements or standards of the American Institute of Electrical Engineers should be observed; for example, in the matter of the installation tests of machinery and certain other features that are described in the standard rules of the Institute of Electrical Engineers and have a bearing on safety. Those rules we did not attempt to duplicate or succeed, because we know they are prepared with very great care and by men who are competent to do the work, and it secures co-operation and lack of confusion by adopting them. In the same way, if the National Electric Light Association should give its especial attention to certain things and have certain very definite practices and standards that are recognized, it will be our policy to refer to that in the rules; if not, we shall prepare something different. These rules are to cover the ground that is to be covered; and we adopt the Underwriters' Rules instead of repeating. The United States Engineers' Bureau is represented in making our tests, giving its technical assistance, and we meet with them in discussion in some cases as actual members of the society and in other cases as conferring members. We manage to keep in touch quite well with most of the engineering societies that are concerned on this subject. That, to a certain degree, is a means of avoiding conflicts and overlapping, if we have the proper co-operation, as I am glad to say that we have had up to the present time.

As an example of utilities having to conform to more than one set of rules, take the case of the New York, New Haven & Hartford Railway Company's blue book and set of safety rules, which contains the rules laid down by the Commissioners of Connecticut and New York, and since those two sets together did not cover the ground, they have also their own set of rules which makes three sets in the same book, which their employees must take account of and observe.

The fact that certain requirements would not, of course, be satisfactory in every State in the Union, we recognized. I stated that we did not suppose that any set of rules would be adopted by any state that would be uniform without exception. Any state that would adopt the rules, could add anything that was necessary and subtract anything that was necessary and that would be comparatively easy in the book of rules as adopted. But to start out with an entirely

new set of rules, differently arranged, then it would be a hard task to have to add to, or to subtract from, some other set, the exception.

As to the manner of protecting the public, I should like to suggest that it seems to me as though the time will shortly come when there ought to be some systematic plan of re-inspections. Some one, speaking about the requirements of the public with the idea that they needed to be protected, said that they were also very often unwilling to be protected. It seems to me that the time will come when there will be some systematic way of re-inspection of electrical work and installation, so that it need not be assumed that when once installed, it will forever remain as it is.

The Chairman: Has any one else any remarks? I understand that the standards as prepared by the Bureau of Standards are not mandatory in any way. They are purely educational. That is something that we need, there is a demand for it in our country, and it is hoped that these rules will be ultimately adopted by the different states, modified from time to time as new conditions arise. I think it is a very good thing to have such standards. If these are not just right, let us modify them and get new ones. That is the only way we shall every accomplish anything.

Is there any further discussion on this question of Electric Code or Rules?

Mr. M. C. Goodspeed, Electrical Engineer, Chairman, Safety Committee, General Electric Co., Erie, Pa.:

I should simply like to emphasize the value of having a basis of standards. Dr. Rosa's statement, in speaking of making the Bureau of Standards' work a basis for the state work of various states, appeals to me as being a very sensible proposition. It is obvious that it is impossible to adopt them or make them so that they will apply to all cases. It will be necessary for the states to adopt them and change them in various ways to meet local conditions; but taking them as a basis, it seems to me that we shall have a standard, and thus get away from the trouble we have had in other lines of having so many starting points that there is no common ground. If this basis is taken and the States' committees follow it as a basis, I believe that we can have practically standard rules that will be understandable by everyone. These rules can be disseminated in such a way that not only the manufacturer and the utility companies but the common mechanic can be familiar with them, and if he has occasion to go from one state to another, he has a basis that he knows is

workable and all he has got to do is to inquire the special provisions for local work that he takes up in the new place.

The Chairman: Are there any further remarks? We have probably ten minutes we can spend on this subject, gentlemen, if you have anything further to say.

(Proceedings will be continued in October Bulletin.)

Vol. 2 No. 10

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

OCTOBER, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below and also by : W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Feehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of S. S. Riddle, Editor.

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PENNSYLVANIA'S RELATION TO INDUSTRIAL SAFETY AND HEALTH.*

Something over two years ago the Penusylvania Legislature established the Department of Labor and Industry. In general, the purposes of this Departmeut were intended to serve the welfare of labor and advance the prosperity of industry. The most strongly emphasized specific fuuction of the Department, however, was to promote methods of procedure which would reduce the terrific toll of life and limb aud health caused by industrial accideuts, vocational diseases, and insanitary conditions in the work place.

The most important subdivisions created in this Department by law for such service were the Iudustrial Board, the Bureau of Inspectiou, the Bureau of Statistics, and the Division of Hygiene aud Engineeriug. It was hoped by thus promoting the legislation which created the Department that a Bureau for the compensation of workmen for accidents would at the same time be created. The Compensation Law, however, failed of passage and was not enacted until last winter. The law as now passed creates a Bureau of Compensation in the Department of Labor aud Industry and a special Board of three to admiuister it.

The Bureau of Statistics, which was primarily created as part of the machinery for proper accident compensation to workmen, was given the duty of collecting reports of accidents. This Bureau is now receiving reports of accidents at the rate of sixty thousand per year. This number of reports is sufficient to show the appalling character of the loss occasioned through injury. Further, since the reports received are made merely by reason of the demand of the law and without personal advantage to those making the reports until the Compensation Law goes into effect on January 1st, it is fair to assume that the total iudustrial accidents in the State are actually at a much higher rate per year than that named. It goes without proof that thousand of small contractors, blacksmiths, cabinetmakers, and others employing small numbers of men will not be heard from unless there is personal advantage to the owner or the employee, and also that with the small State force and limited funds

*Address by Commissioner John Price Jackson, before the 65th Annual Session of the Medical Society of the State of Pennsylvania, held in Philadelphia, September 21st to 24th, 1915.

available many of this large number of small employers cannot be readily reached by the law.

It is probable that as many employees as named above are put out of commission annually through vocational disease, poor sanitary arrangements, imperfect lighting, bad ventilation, etc., but as there has been no machinery created for obtaining detailed reports upon such cases, except where related to poisonous industries, specific information thereupon cannot be given.

Possibly the best manner in which to indicate the relation of the State of Pennsylvania to this great problem of health and safety with its attendant suffering, hardship and loss of human efficiency, can be obtained by a brief resumé of what the Department has been doing under the intent of the legislative action:

THE INDUSTRIAL BOARD.

When the Industrial Board was created it was found that there were but few standards of industrial safety and health in existence in this State, nor were there complete standards in existence for the nation. Many of the States had but begun the preparation of such standards though the Workmen's Compensation Service Bureau at New York, a corporation maintained by accident insurance companies, was advancing rapidly in the preparation of standards for the use of its supporting companies. The result of this was that the factory inspectors of the State were required to act almost entirely upon their individual judgment. This resulted in great variation in the character of the work done; some of it being of high grade and some of an unsatisfactory nature.

The Industrial Board, therefore, at once set about the preparation of a set of standards, beginning with the problem of safety. To do this effectively and in a practical manner, the Board appointed committees of experts from particular industries selected from among the employers in that industry, the employees and those manufacturing machinery used therein. These committees met then with experts of the Department and drew up standards of safety which could be practically applied and which would, as far as possible, reduce the hazard of that particular industry.

The Board has so far finished the work covering a large proportion of the industrial activities of the State. As these standards or rules and regulations have been brought to the point where they have had the unanimous approval of their respective committees they have become effective without serious friction and the industries of the State are rapidly reaching a point of full compliance therewith. When this work is finished, the Board must in like manner take up, formulate, and adopt rules and regulations relating to industrial health and sanitation. In this work the medical

profession will, of course, be deeply interested and will be called upon to form possibly the most important elements of the various voluntary committees required.

THE BUREAU OF INSPECTION.

The Bureau of Inspection includes a Chief Inspector, three regular physicians, several engineers, and the regular district inspectors scattered throughout the State. The district inspectors, in addition to enforcing the Woman's, Child Labor, Mattress, Cannery, Bakeshop, Fire Escape, Theatre, Motion Picture House, and other laws, are particularly charged with obtaining compliance with the safety and health standards and regulations referred to above. Pending the adoption by the Industrial Board of formal regulations as to industrial health, these inspectors follow the preliminary instructions given by the medical men attached to the Department.

Early in the history of the Department it was seen that the use of local physicians in the various districts would be of great service in the inspection work by reason of their training and knowledge as to conditions which would tend toward good health. For this reason physicians were designated as deputies throughout the Commonwealth. The intent was to pay the physicians thus designated a reasonable fee for every inspection made. By doing this it seemed possible to obtain the service of exceptionally well trained men at a much less cost than would be possible by employing continuously a lesser number of physicians and having them travel throughout the State. A sufficient sum of money was designated in the appropriation measure introduced in the Legislature at the last session to enable this work to be commenced. However, by reason of the lack of State funds available, the Appropriation Committee was unable to report the amount necessary. It is still hoped that during the coming year and a half, pending the meeting of another Legislature, some funds may be saved to be devoted to this most desirable and useful purpose.

DIVISION OF HYGIENE AND ENGINEERING.

This Division which acts with the Inspection Bureau—its members being sent to places where unusual conditions arise—has the duty of preparing for the Industrial Board and the public, information which will be of value in reducing accidents, improving health conditions, and increasing the general welfare of workers. The Division has taken up the question of the injury to children between fourteen and sixteen who are working at vocations for which they are not physically adapted; the study of poisonous industries; the preparation of first aid kits; the investigation of the effect of tobacco fumes on tobacco workers, etc. It has created a voluntary committee

of leading Pennsylvania physicians and through the aid of this committee formulated tentative standards for the assistance of doctors in guiding children into work for which they are capable. It has gone into the study of powder factories, which at the present moment when so many new ones are springing up with their great attendant hazard is a matter of much moment; and has been giving particular attention to the welfare and safety conditions in theatres, picture shows, and high buildings. It has also been publishing for approximately a year and a half a bulletin giving information along the lines for which it was created.

It is evident that very valuable help could be given to this Division by the medical profession of the State if those members having special information as to conditions that should be dealt with would so inform the Division, and those having suggestions for improving methods of practice would in like manner co-operate with the Department. Such co-operation, I believe, would not only aid the Department greatly in its work but might in many cases be of material service to the physicians in maintaining good conditions in their local industrial communities.

THE ACCIDENT COMPENSATION SYSTEM.

The accident compensation system which will go into effect on January 1st of next year has the primary object of furnishing the worker promptly after his accident and while he is in special need, definite and adequate compensation to enable him to maintain himself and his dependents. One of the incidental and important effects of this law is that it shall also prove a potent incentive toward the elimination of unnecessary accidents.

In brief skeleton the organization consists of a Bureau of Compensation for the administration of the act; a Board that shall be in charge thereof and shall also sit as a special court for the adjudication of disputed cases; a Bureau of Statistics which collects reports of accidents and will perform various other functions in harmony with the Bureau; an inspection force which shall investigate accidents and perform other necessary services for the system; a number of referees stationed at centers throughout the State whose duties shall be to supervise the settlement of all cases within their districts and to act as mediators between employers and employees in order that settlements in conformity with the law may be obtained without reference to the higher authorities; a Legal Division which will act in an advisory capacity to the Department and the Commission; and a State Insurance Fund to which employers may apply for insurance for their risks. The Division of Hygiene and Engineering is likewise a part of the system having available its engineers and doctors for services in this work. It is probable also

that the physicians spoken of above who have been designated at various points throughout the State for service in the Department will be of valuable use to the referees in settling disputes involving medical questions.

To show the relation of the physician to this system it is worth while to quote from an article in the Compensation Act, viz: (e) Section 306 and Section 314, Article III of Act No. 338, P. L. 1915. They are as follows:

"Section 306. (e) During the first fourteen days after disability begins the employer shall furnish reasonable surgical, medical, and hospital services, medicines and supplies, as and when needed, unless the employee refuses to allow them to be furnished by the employer. The cost of such services, medicines, and supplies shall not exceed twenty-five dollars, unless a major surgical operation shall be necessary; in which case the cost shall not exceed seventy-five dollars. If the employer shall, upon application made to him, refuse to furnish such services, medicines, and supplies, the employee may procure the same, and shall receive from the employer the reasonable cost thereof within the above limitations. If the employee shall refuse reasonable surgical, medical, and hospital service, medicines, and supplies, tendered to him by his employer, he shall forfeit all right to compensation for any injury or any increase in his incapacity shown to have resulted from such refusal.

"Section 314. At any time after an injury the employee, if so requested by his employer, must submit himself for examination, at some reasonable time and place, to a physician or physicians, legally authorized to practice under the laws of such place, who shall be selected and paid by the employer. If the employee shall refuse, upon the request of the employer, to submit to the examination by the physician or physicians selected by the employer, the Board may, upon petition of the employer, order the employee to submit to an examination at a time and place set by it, and by the physician or physicians selected and paid by the employer, or by a physician or physicians designated by it and paid by the employer; and if the employee shall, without reasonable cause or excuse, disobey or disregard such order, he shall be deprived of his right to compensation under this article. The Board may at any time after such first examination, upon petition of the employer, order the employee to submit himself to such further examinations as it shall deem reasonable and necessary, at such times and places and by such physicians as it may designate; and, in such case, the employer shall pay the fees and expenses of the examining physician or physicians, and the reasonable traveling expenses and loss of wages incurred by the employee, in order to submit himself to such examination. The refusal or neglect, without reasonable cause or excuse, of the employee to sub-

mit to such examination ordered by the Board, either before or after an agreement or award, shall deprive him of the right to compensation, under this article, during the continuance of such refusal or neglect, and the period of such neglect of refusal shall be deducted from the period during which compensation would otherwise be payable.

"The employee shall be entitled to have a physician or physicians of his own selection, to be paid by him, participate in any examination requested by his employer or ordered by the Board."

It will be noted by the above Sections that the physician employed shall be one acceptable to, or designated by the employer who shall pay the fees within the regulations of the law; also that the employee himself has the right to employ his own physician to participate in the examination made by the employer's physician. It is further specified that the Board, where the employee refuses to accept the employer's physician, may itself designate a physician or physicians to make an examination whose service shall be paid for by the employer.

This system very properly gives the employer, who is responsible for the compensation payments either directly or through an insurance agency, the right to see to it that the man has proper medical treatment, and also to determine the extent of his injury both as to character and time. With like propriety the employee treated may employ a participating physician of his own selection. In case the employer's and the employee's physicians should disagree, the Board is in a position then to employ its own physician for the purpose of obtaining such information as is necessary upon which to act.

There has been much said of the danger of employees malingering or staying away from work for a greater length of time than their injuries require. This difficulty has not proven serious in other states nor will it in Pennsylvania. This is for two reasons. First, because the great bulk of our people are honest, law-abiding, and just in intention; and second, by reason of the fact that while off duty the employee cannot receive over 50% of his wages except when he has been paid five dollars a week or less. In the few cases of this nature which may arise, the possibility of at any time having examinations made by those who would not be inclined to unfairly favor the employee, will prevent this problem from becoming a serious one.

The medical profession of this State must take a deep interest in the compensation system by reason of the very large number of cases which will arise, and by reason of the fact that the attending physician in each case will be a most important element in the proceedings.

WOMAN'S AND CHILD LABOR LAWS.

The woman's and child labor laws were enacted specifically for the purpose of properly protecting the health of women and children by restricting their hours and conditions under which they work. This was primarily for the purpose of enabling women to bring forth healthy children, and to enable those children to grow into strong and capable adults.

The new child labor law passed last winter is in many ways the best of its kind to be found in this country. Among its provisions is one requiring that each child between the ages of 14 and 16 must obtain a suitable medical certificate before going to work for a wage. The intent of this requirement is to give a physician an opportunity of determining whether or not the child is physically capable of labor, and if the decision is in the affirmative whether the employment he seeks is of a character which will not injure him. The law has many valuable features such as the continuation schools which are destined to very greatly improve the skill of our workers, and the conditions and hours of labor, but probably, of all the elements in the law, none is of more importance than the medical guidance provided for. This law goes into effect on January 1, 1916, and with the earnest support of the medical profession it will prove a distinct step in advance in our industrial conditions.

There are many other lines of Department activity, such as the settlement of strikes; the enforcement of the hours of labor laws, etc., etc., which I shall not touch upon in this paper by reason of their not being so directly related to the medical profession as are those concerning which I have spoken.

There are also a number of special laws relating to bakeshops, to the business of mattress making and selling; canneries; and special laws relating to industrial disease, etc., which are aimed directly to preserve the health of the people, but which likewise I must omit from consideration here on account of the lack of time.

One of the Governors of Pennsylvania in a conversation with a few of his friends, made the statement that he believed that the medical profession formed the most sincere, honest, and aggressive influence in the Commonwealth for the practical and sensible promotion of humane activities to advance the welfare and happiness of our people. In this opinion I believe the great majority of laymen concur. It is therefore with unusual earnestness that I have come before you this morning to indicate some of the activities of the Department for which I am responsible to the Governor, and to ask you particularly for your earnest co-operation both individually and collectively in advancing especially the three most important lines of the Department's work, viz; the physical welfare of children and women workers; the development of standards for the health and

safety of all industrial workers; and the enforcement in a reasonable and sensible manner of the Accident Compensation Law in such a way that it may acomplish its humane and desirable purposes. I am sure that in asking your active co-operation with the State government along these lines, that I am carrying out the wishes of the Governor who has emphatically expressed himself before election as wishing to improve the industrial conditions of Pennsylvania for her workers, and who since his election has given a large proportion of his time to perfecting machinery for carrying out his ideas.

Possibly the most comforting knowledge with regard to this whole range of governmental activities is that if they are promoted wisely, they not only have the direct effect of improving the health and safety of those engaged in industry, but are as a whole of a character to actually increase the prosperity and possibilities of the industries themselves.

DISTRICTS ESTABLISHED FOR ENFORCEMENT OF WORKMEN'S COMPENSATION ACT.

The State Workmen's Compensation Board has announced the counties included in each of the eight districts into which the State is divided for the administration of the Workmen's Compensation Act, which goes into effect January 1st.

Ten referees will be appointed; two to be located in the Philadelphia district, two in the Pittsburgh district and one in each of the six interior districts. The headquarters for referees, outside of the Philadelphia and Pittsburgh districts, will be Reading, Scranton, Harrisburg, Williamsport, Altoona and Erie.

District No. 1 includes Philadelphia, Delaware, Chester, Montgomery and Bucks Counties. The two referees of this district will have their headquarters in Philadelphia.

District No. 2 includes Berks, Schuylkill, Lehigh, Northampton and Carbon Counties. The headquarters of the referee will be at Reading.

District No. 3 includes Montour, Columbia, Luzerne, Monroe, Pike, Wayne, Lackawanna, Susquehanna and Wyoming Counties. The headquarters of the referee will be at Scranton.

District No. 4 includes Dauphin, Lebanon, Lancaster, York, Adams, Franklin, Cumberland and Perry Counties. The headquarters of the referee will be at Harrisburg.

District No. 5 includes Tioga, Lycoming, Bradford, Sullivan, Union, Snyder, Centre, Clearfield, Clinton, Cameron, Potter and Northumberland Counties. The headquarters of the referee will be at Williamsport.

District No. 6 includes Cambria, Blair, Huntingdon, Mifflin, Juniata, Fulton, Bedford and Somerset Counties. The headquarters of the referee will be at Altoona.

District No. 7 includes Erie, Warren, McKean, Elk, Forest, Venango, Mercer and Crawford Counties. The headquarters of the referee will be at Erie.

District No. 8 includes Lawrence, Butler, Clarion, Jefferson, Indiana, Armstrong, Westmoreland, Fayette, Greene, Washington, Beaver and Allegheny Counties. The headquarters of the two referees for this district will be at Pittsburgh.

STATE EMPLOYMENT BUREAU.

The central office of the State Employment Bureau was opened at Harrisburg on October 1st. This Bureau was created by the last Legislature to relieve unemployment within the State and to guide children into vocations for which they are best adapted. It will also supervise all commercial employment agencies operating within the State. Branch offices will shortly be established in Philadelphia, Pittsburgh and Scranton and co-operation will be extended to any municipalities in any section of the State where branch labor exchanges are desired.

The Employment Bureau of the Department of Labor and Industry will carry out the provisions of the two Acts passed by the last Legislature. One Act virtually establishes, under State supervision, free employment agencies where unemployed persons may apply for information regarding employment in any line of work, and where employers may file their requests for laborers, skilled or unskilled.

The machinery of the Bureau is to be extended to all sections of Pennsylvania and an interchange of information with the National Employment Bureau at Washington will enable the State Bureau to give information regarding possibilities for employment or obtaining of workers even beyond the limits of Pennsylvania.

The other Act of the Legislature to be administered by the Employment Bureau provides for the regulation of all Pennsylvania employment agencies conducted for a profit. Every commercial employment agency is required to pay an annual license fee of $50.00 and must also furnish a bond $1,000.00.

Every private employment agent will also file with the Department of Labor and Industry a schedule of fees charged employers seeking employees, or persons seeking employment and that schedule may be changed only with the approval of the Commissioner of the Department of Labor and Industry.

A plan for the establishment of the branch of the State Employment Agency in Philadelphia provides for co-operation with the Home Relief Division of the Philadelphia Emergency Aid Committee.

In cities where Compulsory Education Bureaus are maintained by the public school system, a Division of Vocational Guidance will operate within the Compulsory Education Bureau in conjunction with the State Employment Bureau. Plans for such action have already been formulated by representatives of the State Department of Labor and Industry and the school authorities of Philadelphia and Pittsburgh.

The Division of Vocational Guidance is to aid a child between the ages of 14 and 16 years to get work and to facilitate the efforts of employers desiring to hire children. A child desiring to leave school to enter employment will first make application to the Principal of the school and the Principal will forward the application card to the Division of Vocational Guidance with the school record of the youthful applicant.

In supplying child workers to employers, preference will be given children, who, in the judgment of the Chief of the Bureau of Compulsory Education, need work because of economic conditions.

The Director of the State Employment Bureau is perfecting application forms for persons seeking employment through the Bureau and for employers seeking employees. He will also communicate with officials of various municipalities in the State to learn labor conditions in the various localities.

Conferences have already been held with agents, who operate commercial employment offices and it has been pointed out to them that enforcement of the new law will not work hardship to them, but will establish a supervision that will benefit reliable private employment agencies in all sections of Pennsylvania.

SOME FACTS ABOUT WORKMEN'S COMPENSATION AND THE STATE WORKMEN'S INSURANCE FUND.

Plans for perfecting the machinery of the State Workmen's Insurance Fund are now being formulated by the State Workmen's Insurance Board, which includes State Treasurer Robert K. Young, Insurance Commissioner Charles Johnson and Commissioner John Price Jackson of the Department of Labor and Industry. Francis H. Bohlen, of Philadelphia, is legal advisor for the Board by appointment of Attorney General Brown.

Albert L. Allen, formerly assistant to the general management of the New York State Workmen's Insurance Fund has been appointed assistant manager of the Pennsylvania Fund.

The State Workmen's Insurance Fund was created to give to employers of labor in Pennsylvania at a minimum of cost, the maximum of protection against the obligation imposed upon them by the Workmen's Compensation Act of 1915.

This Act applies impartially to all employers, large and small. The store-keeper with one assistant, the professional man with one stenographer, the carpenter or plumber with one helper, is under the same liability as an individual or corporation employing hundreds or thousands of men in the most hazardous trade.

The Workmen's Compensation Act of 1915 gives to a vast majority of employees, injured within the State of Pennsylvania, after December 31, 1915, the right to require their employers to pay them a limited, but certain compensation for all injuries, not purposely self-inflicted or caused by a third person, who may attack an employee for reasons personal to him, if these injuries disable them for more than 14 days.

The only classes of employees exempted from this right to compensation are those engaged in domestic service or agriculture, those whose work is both casual and outside of the employer's regular business and those, who, in their own homes, make up, clean, wash, or alter material or articles furnished them by their employers.

An employer may escape this liability by serving notice upon every one of his employees that he does not agree to make these certain but limited payments and by sending a copy of this notice with sworn proof of service to the Workmen's Compensation Bureau at Harrisburg; but if he does so, he escapes one liability only to fall into another and on the average a more burdensome one. He becomes liable to an action at law for unlimited damages and this with the greatest part of the defenses now open to him swept away. Against

a certain but narrowly limited liability, he incurs a risk of a very probable recovery, the amount of which depends upon the verdict of a jury.

The Compensation Act requires every employer to insure this compensation by subscribing to the State Insurance Fund or by taking out a policy in some stock or mutual insurance company or association unless he satisfies the Workmen's Compensation Board of his financial ability to make all the payments required by the act and secures from the Board an exemption from the necessity of insurance.

If the employer fails to insure without securing this exemption, any injured employee, may, after the accident, claim the limited compensation provided in the Act or he may sue in an action at law for unlimited damages.

Of the three methods of insurance permitted, State, stock company and mutual association, insurance in the State Fund alone gives complete protection from personal liability and from the filing of liens on the employer's real property which may very probably hinder, if not prevent, its sale or its use as security for the borrowing of money.

Every other form of insurance leaves the employer personally liable, every agreement or award of compensation may be entered as a lien against his land and cannot be discharged until the whole compensation agreed upon, or awarded, has been paid in full, which may readily not be for 8 or 10 years.

On the other hand, a subscriber to the State Fund, by giving to the Department of Labor and Industry the same notice of an injury to an employee, which he is now by law required to give, relieves himself from all personal liability. The State Fund immediately assumes all his obligations and no claim against him can become a lien or cloud on his property, real or personal.

In addition, the Act creating the State Fund makes a sufficient appropriation to pay all expenses. This, with the entire absence of agents' and brokers' commissions enables the State Fund to give this complete protection practically at cost.

It has been virtually decided to offer insurance rates at a material reduction from those charged by stock companies. The experience of other States where such Funds are in operation shows that, in addition to these originally lower rates, subscribers received dividends at the expiration of each year ranging from 5 to 20 per cent.

Full information regarding the Fund, its rates and requirements and the application forms necessary to become a subscriber to it can be obtained by writing to the State Workmen's Insurance Board, Harrisburg, Pa.

ACCIDENTS REPORTED DURING SEPTEMBER, 1915.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.	
Nursery,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Engineering,	1	.....	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	34
Building trades,	.....	8	7	3	9	3	4	3	1	30	.....	.....	.....	76
Chemicals,	2	15	11	15	15	11	7	3	5	68	.....	.....	.....	83
Clay—Glass,	3	10	14	16	14	16	10	4	7	72	.....	.....	.....	11
Clothing,	1	2	2	6	.....	.....	.....	.....	.....	11	.....	.....	.....	20
Food,	2	1	5	5	3	.....	4	1	.....	19	.....	.....	.....	24
Leather,	1	5	3	5	7	1	2	.....	.....	24	.....	.....	.....	6
Liquors,	.....	2	1	1	1	1	.....	.....	.....	6	.....	.....	.....	29
Lumber,	.....	5	5	6	6	6	1	.....	2	27	.....	.....	.....	26
Paper,	2	5	7	.....	5	4	3	1	.....	25	.....	.....	.....	11
Printing,	.....	1	5	.....	2	1	2	.....	1	10	.....	.....	.....	27
Textiles,	.....	2	3	6	2	7	7	.....	1	26	.....	.....	.....	44
Miscellaneous,	2	6	8	7	5	6	10	2	3	39	.....	.....	.....	2
Laundries,	.....	.....	1	.....	.....	1	.....	.....	.....	2	.....	.....	.....	2,629
Metals,	119	460	437	443	439	418	313	24	116	2,488	.....	.....	1	1,223
Mines,	20	190	174	211	220	246	162	54	110	1,059	.....	.....	.....	1,440
Public Service,	67	232	249	280	245	219	148	2	57	1,381	.....	.....	.....	1
Tobacco,	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	5
Unclassified,	.....	1	1	2	1	.....	.....	1	1	3	.....	.....	.....	
Total,	220	945	933	1,007	975	940	673	97	305	5,290	.....	.....	1	5,693

ACCIDENTS REPORTED DURING SEPTEMBER, 1915.

The far-reaching effect that the Workmen's Compensation Act, which becomes operative next January first, will have in Pennsylvania, is forecasted in the toll of industrial accidents reported to the Department during the month of September. At least 500 of 5,693 injuries sustained by workers within the State during September would have been subject to compensation payments under the terms of the Act.

Ninety-seven men were killed during the month; 305 seriously injured and 5,290 received injuries of a minor nature. One woman received minor injuries while working in a factory classified under metal trades.

The Workmen's Compensation Act would have direct effect on the 97 deaths in industries and on virtually every one of the 305 serious injuries, as under the present classification in the Bureau of Statistics a serious injury is one which causes the loss of employment for 30 days or more. The terms of the Workmen's Compensation Act, which require that compensation payments be made to a workman disabled for more than 14 days, would include a portion of the 5,291 workers, who received minor injuries.

The total of 5,693 killed and injured workers during September is the highest record for any month in the Bureau of Statistics. The highest previous record was for August, when 5,588 employees in Pennsylvania were injured. During that month 249 of the injuries were serious and 84 persons died as a result of injuries received.

Fifty-four men were killed and 110 seriously injured in mines during the month of September and 24 were killed and 116 seriously injured in metal trades. The industrial activities in metal trades resulting from war orders is reflected in the fact that 2,629 persons were injured during September in that line of work. One hundred and nineteen metal trade workers were injured on Sunday during September, indicating the continuous daily activities in plants of the metal trades.

Wednesday continues to lead as the day of most accidents. One thousand and seven workers were injured on Wednesdays during September, 975 on Thursdays, 945 on Mondays, 940 on Fridays, 933 on Tuesdays, 673 on Saturdays and 220 on Sundays. The total number of injuries to workers reported to the Department during the first 9 months of this year is 38,728. Of that number 744 resulted in death and 2,752 were classed as serious injuries.

VOLUNTEER FIREMEN AS USHERS IN TABERNACLES FOR EVANGELISTIC CAMPAIGNS.

For several years past, evangelistic campaigns have been conducted in many of the towns and cities of this State. The services incident to these campaigns are, when the size of the community warrants it, usually held in temporary structures erected especially for this purpose. These buildings, commonly called tabernacles, are of frame construction which in itself is a great fire hazard. In addition to this, the furnishings also, consisting almost in whole of wooden benches and sawdust, are no slight fire risk.

These buildings while covering a large area of ground are never more than one story in height and have numerous exits on all sides. During the time that services are being conducted a large number of ushers effectively patrol all portions of the structure. It is, therefore, highly improbable that any fire originating in the building during the course of the services could gain much headway, and even in case of a fire arising at such time, the building could be emptied very quickly provided no panic occurs.

The necessity of having as ushers men who have ability to control and direct a crowd is therefore of the greatest importance. It goes without saying that adequate provision for the prompt control of fires should be provided in the shape of numerous fire-extinguishers placed at stations which are only short distances from each other and are readily accessible. Reels of fire hose should also be close at hand with proper connections to an ample water supply.

It is not necessary that all the ushers should be skilled in controlling crowds or fighting fires but a few such men advantageously placed would undoubtedly reduce the fire and panic hazard to a minimum.

In an evangelistic campaign just concluded in one of the towns of this State the committee made it a point, at the suggestion of Commissioner Jackson, to secure as a part of their force of ushers, volunteer firemen. This was not a difficult task. The presence of these men and the purpose in having them there was well known throughout the community and gave a sense of security not only to those in charge of the campaign but to the audience as well.

The Commissioner feels that the procuring of some firemen to act as ushers wherever such meetings are held would be an easy task. He, therefore, urges that people having charge of campaigns of this nature bear this suggestion constantly in mind while perfecting their organization and thus play their part in promoting the safety and welfare of the crowds which look to them for protection.

THE ERIE FLOOD AND ITS LESSON.

By FARLEY GANNETT, Consulting Engineer, Harrisburg, Pa.

The disastrous flood in Mill Creek at Erie, Pa., on August 3rd, 1915, with the resulting loss of 34 lives and over $2,000,000 in property has started the officials of many a city to wondering whether the usually harmless little stream which passes through its center may not also have similar dire possibilities in it. They are wondering what would happen if a volume over 1,000 times its usual flow suddenly debouched down the creek channel.

Unfortunately few cities will do more than wonder about it. These few may get to the point of having engineering studies made to determine the answer to their queries but I venture to say none will construct the recommended protection works. Each city will wait until its turn comes to learn by its own experience that no stream is exempt from damaging floods when it passes through a thickly built upon valley, and is crossed by inadequate bridges and encroached upon by buildings, walls and filled-in banks and made a dumping place for debris and wastes. Then perhaps the stream will be surveyed and studied and remedial works may be built. But it is nearly always after the horse has been stolen that the barn door is thus locked.

One afternoon a gentle shower began to fall in Erie, and it gradualy rained harder and harder until by nightfall everyone realized that a rain of phenomenal intensity was in progress. Mill Creek had so far as most people knew been a placid, harmless stream with only occasional signs of its vigorous possibilities. But on this occasion it rose beyond all previous experience and became a roaring, death-dealing torrent, rushing through the heart of the city. In 1893 was the last time previously it had really rioted through the valley and carried destruction with it and only the oldest residents remembered this event.

But since 1893 the valley has been filled with houses and factories; 21 streets and 3 railroads now cross it, all of the streets are built up solidly and filled in over this Creek, leaving a small opening underneath for it to flow through.

The flood came down the valley from this great rain of August 3rd, last and accumulating momentum and vast quantities of debris, including trees, brush, houses, rocks, wagons, and even automobiles, swept clear a swath a block wide for two miles through the city. Two hundred houses, the homes of over 1,000 people, were torn from their foundations and swept into the flood. The peaceful little

stream, draining only a dozen square miles of upland, belched forth a flood volume 9 times as great as the low flow of the great Ohio River at Pittsburgh, upon which large steamers navigate.

Fortunately this all occurred early in the evening, before many had gone to bed. It was also after the factories had closed. Had it happened earlier in the day when the mills and factories were crowded with workmen, the loss of life would probably have been inmeasurably greater.

The jeopardy to manufacturing institutions and other buildings filled with employees in a situation of this sort is very great. No one can conceive of the destructiveness that is coming; everyone believes the water will not rise higher, because it hasn't done so before. Therefore, they stay at work or watch the flood passing until it is too late and their refuge becomes a tangled mass of wreckage in the roaring torrent.

About a mile below where Mill Creek enters the city of Erie, the stream disappears under normal conditions, under a large machine works for the manufacture of engines. Hundreds of men are employed there. The opening under the building is 20 by 4 feet and it was sufficient to carry, even had it remained clear, only a fractional portion of the flood flow. This opening became clogged with debris and the entire flood threw its fury against this brick structure passing entirely through it by doors and windows and around the boundary streets. The water rose 8 to 10 feet deep within and around the building.

Farther downstream was a great brick structure in which more hundreds of employees made pipe fittings, bolts and nuts. The same thing occurred there as above and it was due largely to the fact that the employees had left at the end of the day, that little loss of life occurred at these two places. Other smaller factories, work- and sales shops suffered in an even worse manner. One large new garage was entirely destroyed, a wagon painting works was undermined and its walls caved in, others were swept away.

Much of the loss of life was due to the fact that residents would not believe the water would rise so high that their homes would be carried away and destroyed and so they stayed in their houses until the rapidly rising water was too deep and swift to allow them to escape.

In Pennsylvania there are scores, perhaps even hundreds of streams which are a similiar jeopardy and potential danger to homes and factories. The necessary amount of precipitation hasn't yet fallen on the watershed, since the lower valleys have been built upon and the lower channel narrowed by encroachments, to cause the destruction Mill Creek did in Erie, but there is no guar-

antee that it may not happen and there are reasons to believe that it will in many instances.

This is not a question to which the city officials can determine the answer without thorough investigation, by those familiar with similiar occurrences elsewhere and with the vagaries of small streams when subjected to high rates of rainfall. It is becoming a question of more and more vital importance, as our cities become more densely populated and more thickly built up. It isn't that the nature and habits of the streams have changed so much as it is that the occupancy of their valleys has changed. When there were no mills, factories or houses in stream valleys, the waters might rise in tremendous flood and descend again to normal proportions and no one would take note of it, but when the valleys have become filled with destructible lives and buildings, the same flood becomes a calamity.

Vol. 1 No. 13

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

FOUNDRIES

OPERATIVE ON AND AFTER NOVEMBER 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

FOUNDRIES.

The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Caution:—Employees shall not remove or make ineffective any safeguards while same are in use, except for the purpose of making repairs, and such safeguards so removed shall be replaced.

DEFINITIONS:

An iron or steel foundry shall mean a place where iron or steel or both metals are melted and poured into molds in the making of castings, together with all cleaning, core-making, drying, wash rooms and toilet rooms, used in connection therewith.

The term "entrance" as used in these regulations, shall mean main doorways opening directly to the outer air.

The term "gangway" as used in these regulations, shall mean well defined passageways dividing the working floor of foundries but not the spaces between molds. Spaces between molds shall be divided into three classes, which shall be known as "bull-ladle aisles," "hand-ladle aisles," and "buggy-ladle aisles."

Unless otherwise specified, these regulations shall, as to the subjects covered therein, exempt foundries from the provisions of other regulations relating to such subjects.

ENTRANCES AND WINDOWS:

Section 1. Entrances to foundries shall be protected from November first to April first of each year by a covered vestibule, either stationary or movable, which shall be so constructed as to eliminate drafts and of such dimensions as to answer ordinary purposes, such as the passage of wheelbarrows, trucks and small industrial cars. This regulation shall not apply to entrances used for railroad or industrial cars handled by locomotives or motors, or for traveling cranes, horse drawn vehicles or automobiles; these entrances may remain open only for such time as is necessary for the ingress and egress of such cars, trucks and cranes, horse-drawn vehicles or automobiles. No locomotive shall be permitted to remain inside the factory during the loading or unloading of the cars.

GANGWAYS:

Section 2. Main gangways, where metal is carried by hand, bull or truck ladles, shall not be less than five feet wide. Truck-ladle gangways which are not main gangways shall not be less than four feet wide. Bull-ladle aisles between floors shall not be less than three feet wide. Single hand-ladle or buggy-ladle aisles between floors shall not be less than eighteen inches wide. Where trolleys are used over molding floors for pouring metal, the aisles shall be of sufficient width to permit the safe ingress and egress of employees and the safe use of the ladles. Where it is necessary to occupy the central portion of the floor space in the production of castings, continuous gangway space shall be provided.

Section 3. During the progress of casting, every gangway or aisle shall be kept entirely free from undue dampness or obstructions of any nature. Every gangway shall be kept in good condition at all times. Every gangway where industrial trucks are used shall be constructed of a hard material of substantial character and the top of the rail shall be flush with the floor.

REMOVAL OF SMOKE, STEAM, GASES AND DUST:

Section 4. Where smoke, steam, gases or dust arising from any of the operations of the foundry are dangerous to health or eyes and where a natural circulation of air does not carry off such smoke, steam, gases or dust, there shall be installed and operated hoods, ventilators, fans or other mechanical means of ventilation approved by the Industrial Board.

Section 5. The cleaning and chipping of castings shall be done in cleaning rooms except that where traveling cranes or where, in existing installations cars are used for conveying castings into such rooms, a separating partition shall be erected which shall not be less than twelve (12) feet in height. In existing installations, where the crane cage or crane girders will not permit the erection of a twelve-foot partition, the height of the partition may be reduced sufficiently to permit of the clearance of same. Large castings may be chipped or cleaned by hand in the molding and casting room, provided sufficient protection is furnished by the use of a curtain or screen or some other means equally good to protect employees who are otherwise employed therein. This regulation shall not apply if mechanical contrivances are used for cleaning castings and the dust and particles arising therefrom are effectively removed at the point of origin by means of an exhaust system.

Section 6. Where tumbler mills are used, exhaust systems shall be installed to effectively carry off the dust arising from the cleaning of castings except where the mill is operated outside the foundry.

This regulation shall not prohibit the use of a water barrel to clean castings. Sand blast operations shall be carried on in the open air or in a separate room used solely for such purpose. The milling of cupola cinders, when done inside the foundry, shall be carried on by an exhaust mill or water mill, each of a type approved by the Industrial Board.

Section 7. The floor beneath and immediately surrounding the cupola shall slope and drain away from the base of same.

Section 8. Cores shall not be blown out of castings by compressed air unless such work is done outside the foundry or in a special room or dustproof enclosure approved by the Industrial Board. Men employed in cleaning castings by compressed air or sand blast shall wear eye guards and helmets approved by the Industrial Board.

LIGHTING AND HEATING:

Section 9. Where natural light is insufficient properly to light the foundry, artificial light of sufficient power shall be provided, in the discretion of the Industrial Board.

Section 10. Interior walls of foundries shall be whitened, in the discretion of the Industrial Board.

Section 11. Proper and sufficient heat shall be provided and maintained in every foundry. Open fires may be used for the drying of molds or cores if coke containing less than one per cent. of sulphur is used; also charcoal, gas or oils may be so used; where practicable, such drying of molds or cores shall be done at night.

Section 12. All hand and bull ladles shall be dried in ovens or outside of the foundry. A sufficient number of sheet-iron shields shall be available in iron foundries for use in covering hand bull ladles.

Section 13. Suitable facilities shall be provided for the thorough drying of employees' clothing. Such facilities may be located in the wash room, the locker room, or in a room used exclusively for such purpose.

SANITARY CONVENIENCE IN FOUNDRIES:

In each foundry in which ten or more persons are employed or engaged in labor, there shall be provided and maintained for the use of said employees in a place conveniently accessible and connected with said foundry in such a manner that access thereto can be had without exposure to the open air, a toilet room of suitable size wherein said employees may change their clothes; such toilet rooms shall be provided with wash bowls of sufficient capacity adequately equipped with hot and cold water service; such wash rooms

shall be kept clean and sanitary and shall be properly heated during cold weather. There shall also be established and maintained separate from said toilet rooms, a suitable water-closet. The said toilet room and the said water-closet shall be connected with the foundry building in such a way that access thereto may be had without exposure to the open air and shall be properly heated, ventilated, cleaned and protected from the dust of such foundry.

WATER-CLOSETS:

Section 14. Water-closets shall be provided in every foundry and for each sex, according to the following table:

Number of Persons.	Number of Closets.	Ratio.
1 to 10	1	(1 for 10)
11 to 25	2	(1 for 12½)
26 to 60	3	(1 for 16⅔)
61 to 80	4	(1 for 20)
81 to 125	5	(1 for 25)

For every unit of forty-five or fractional part thereof in excess of one hundred and twenty-five (125) persons employed, one additional water-closet shall be provided.

URINALS:

Section 15. Where less than thirty (30) males are employed at one time there shall be provided one individual urinal; where more than thirty (30) and less than eighty (80) males are employed, two urinals shall be provided, and thereafter one individual urinal shall be provided for every eighty (80) men employed or fractional part thereof. At least two (2) linear feet of trough or slab urinal shall be considered the equivalent of one individual urinal.

WASHROOMS AND WASHING FACILITIES:

Section 16. Wash basins with faucets for hot and cold water shall be supplied according to the following table:

Number of Persons.	Number of Wash basins.	Ratio.
1 to 8	1	(1 for 8)
9 to 16	2	(1 for 8)
17 to 30	3	(1 for 10)
31 to 45	4	(1 for 11¼)
46 to 65	5	(1 for 13)

For each additional twenty-five (25) employees at least one additional wash basin shall be supplied.

Section 17. Wash-rooms hereafter installed where twenty (20) or more men are employed shall be provided with at least one shower bath with an ample supply of hot and cold water, and for every additional fifty (50) men one additional shower bath shall be provided.

LOCKERS:

Section 18. Individual lockers, arranged for locking, shall be provided for employees and shall be placed in a room used exclusively for such purpose, in the wash-room, the drying room or at convenient places in the molding room. In cases of dispute the necessity for, and the number of, such lockers shall be determined by the Industrial Board.

(Note:—The provisions of the Sanitary Regulations issued by the Industrial Board shall apply in all matters not specifically covered herein.)

MAINTENANCE:

Section 19. Ladles, shanks, tongs, slings and yokes, skimmers and slag hoes used in the pouring of molten metal shall, prior to their use, be inspected daily as to their safety, by the men preparing and using same; and in addition a regular inspection as to their safety shall be made once a month by a man designated for that purpose. A monthly inspection shall also be made of the chains and cables on counterweights used in connection with drying ovens. Reports of such monthly inspections shall be made on forms prescribed by the Industrial Board and shall be kept on file for their examination.

Section 20. All fire ways connected with drying ovens, when built in the floor, shall at all times be protected by either a substantial protecting cover or a standard railing as defined in Safety Standards, Volume I, No. 2.

Section 21. All trap-doors shall be guarded when open, either by standard railings, as described in Section 20, or watchmen, and all pits shall be properly covered or railed when not in use, and sufficiently guarded at other times.

Section 22. All passageways and stairways shall be properly lighted and inclined runways and stairways, charging decks and platforms shall be safeguarded with standard railings as described in Section 20.

Section 23. All ladles pouring from the lip of 2,000 pounds capacity, or more, shall be equipped with a worm geared device for tilting the same. All ladles not so equipped, shall be changed to conform with the above regulation on or before September 19, 1917. All crane truck and trolley pouring ladles shall be so constructed

that the center of gravity shall be below the bail unless ladles are equipped with a geared device approved by the Industrial Board; and shall be equipped with a clip to prevent overturning.

Section 24. Trunions on flasks shall be capable of sustaining the loads they are required to handle. Trunions hereafter constructed shall be carefully designed to carry the load they are to handle and constructed with a factor of safety of at least ten (10), including bolts where they are used. The diameter of the button shall be equal to the diameter of the groove plus one and one-half times the diameter of the sling used to handle the flask. Inside corners shall be well filleted and in order to prevent the sling slipping off or riding the button, the radius of the corner between groove and button shall be approximately equal to the radius of the sling used, the remainder of the inside edge of the button to be straight. All trunions constructed after October 1, 1915, shall bear the date of their construction.

Section 25. The use of high explosives on the foundry premises for the breaking of castings is prohibited unless effective protection is provided.

Section 26. The breaking of castings by the use of a drop inside the foundry during working hours is prohibited.

Where a drop is used for the breaking of castings or scrap outside of the foundry a permanent shield of heavy planking or other effective protection shall be provided.

Section 27. Every employee shall use safety devices furnished for his protection by the employer, where there is a hazard connected with his employment.

REGULATIONS FOR COREMAKING ROOMS IN WHICH WOMEN ARE EMPLOYED:

Section 28. Where rooms in which core ovens are located adjoin rooms where cores are made by females and where the making of cores and the baking of cores are simultaneous operations, the partition between such rooms shall be constructed of concrete, hollow tile, brick, metal, or other material approved by the Industrial Board and there shall be in such partition only such openings as are required by the nature of the business.

Section 29. All openings in partitions between the core oven room and the room in which females are employed shall be vestibuled with a revolving device or double doors which shall be self-locking, or any other self-closing device equally effective, which shall be approved by the Industrial Board. Such device shall be kept in such condition that gases, fumes, and smoke shall be effectually trapped.

Section 30. No female shall be allowed to handle cores which have a temperature of more than one hundred and ten degrees Fahrenheit.

Section 31. No female shall be permitted to make or handle cores when the combined weight of core, core box and plate at which she is working exceeds fifteen (15) pounds.

BRASS FOUNDRIES:

Definitions:

The term "brass foundry" shall mean a place where brass, aluminum, copper, tin, zinc, gold, silver, or composition metals containing any of the foregoing metals are melted or poured into molds in the making of castings, except that foundries where aluminum only is melted shall be covered by regulations governing iron and steel foundries.

The term "cellar" when used in these regulations shall mean a story more than one-half below the level of the ground surrounding the building.

The term "basement" when used in these regulations shall mean a story partly but less than one-half below the level of the ground surrounding the building, and shall be considered the first story of such building.

Section 32. The regulations relative to dust, smoke, gases or fumes, ventilation, sanitation, heat, light, gangways and aisles, safety appliances, washrooms, cleaning rooms, drying and locker accommodations, as specified for iron and steel foundries, shall apply to brass foundries, except that main gangways shall not be less than four (4) feet wide and gangways between molds on spill troughs shall not be less than three (3) feet wide.

Section 33. When the crown plate of an upright melting furnace is elevated above the surrounding floor in excess of twelve (12) inches, the furnace shall be equipped with a platform guarded with a standard railing; and such platform shall be constructed of metal or other fire-resisting material, and shall extend along the front and sides of the furnace, flush with the crown plate and shall be at least four (4) feet in width and shall be clear of all obstructions during pouring time. If the platform is elevated above the floor in excess of twelve (12) inches the lowering from same of crucibles containing molten metal shall be by mechanical means.

Section 34. When the combined weight of a crucible, tongs and molten metal exceeds one hundred (100) pounds, it shall be removed from the furnace and deposited on the floor by mechanical means.

Section 35. When smoke finish is desired on molds made on benches or tubs, smoke boxes which shall effectually trap the smoke shall be used; such boxes to be connected with flues to the outer air.

Section 36. When molders work side by side at least five (5) feet of space sideways shall be allowed for each man, and a clear space of three (3) feet shall be provided back of each man.

Section 37. Hoods shall be provided directly above all brass melting furnaces using gas or oil as fuel, which will effectually trap all gases and fumes generated in the melting of the metal; such hoods shall be provided with outlet pipes to lead the gases or fumes to outer air.

Ventilators shall be provided over all other furnaces used for melting brass or composition metal, to effectually remove the gases above the furnaces.

Section 38. Brass foundries shall be provided with natural light from at least two sides or from at least one side, and skylights in roof.

Section 39. All persons removing pots containing molten metal from furnaces or handling such pots shall be provided with protection for legs and feet.

Section 40. Gangway dirt and floor scrapings shall not be riddled in the room where workmen are employed, unless it is so dampened as to prevent dust arising therefrom.

Section 41. Stoves for drying molds, when located in the rooms used by workmen, shall be surrounded by a casing of fire-resisting material, to the full height of the stove at the discretion of the Industrial Board.

Section 42. No brass foundry shall hereafter be constructed with a clearance less than fourteen (14) feet between the lowest point of the ceiling and the floor, except that where a peak, saw tooth, monitor or arch roof is constructed the side walls may be of a minimum height of twelve (12) feet.

FUTURE CELLAR FOUNDRIES:

Section 43. No foundry shall hereafter be located in a cellar or basement unless the ceiling shall be at least fourteen (14) feet in height, measured from the finished floor to the under side of the ceiling; and, if the foundry is located or intended to be located entirely in the front part of the building, unless the ceiling shall be in every part at least six (6) feet six (6) inches above the curb level of the street in front of the building; or, if the foundry is located or intended to be located entirely in the rear part of the building, or to extend from the front to the rear, unless the ceiling shall be not less than three (3) feet above the curb level

of the street in front of the building, and the foundry shall open upon a yard or court which shall extend at least six (6) inches below its floor level; nor unless proper and adequate provisions shall be made for lighting and ventilation.

EXISTING CELLAR FOUNDRIES:

Section 44. In case any foundry that was legally operated in a cellar or basement on October 1, 1915, shall be discontinued or closed by the Department, it can thereafter be reopened as a foundry only by complying with the provisions of the regulations relating to future foundries. The occasional use of a foundry for the purpose of evading this regulation shall not be deemed a continuance of use thereof.

JOHN PRICE JACKSON, Chairman.
OTTO T. MALLERY,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Adopted August 18, 1915.

Pamphlet copies of all Standards issued by the Industrial Board may be obtained by addressing Department of Labor and Industry, Harrisburg.

PROCEEDINGS OF THE SECOND ANNUAL WELFARE AND EFFICIENCY CONFERENCE.

(Continued from September, 1915, Bulletin).

FIRE EXITS.

H. W. FORSTER, Independence Inspection Bureau, Philadelphia, Pa.

How much of our national death-toll is due to fire? Perhaps 1,500 to 2,000 people are killed each year by fire alone, not considering deaths on the seas or those under the surface of the earth. That is, perhaps 1-20 of the total number of lives lost through accidents each year can be attributed to fire.

The three kinds of disasters that recur with considerable regularity are ship disasters, mining disasters, and fire disasters. These

are the ones which engage public attention for more than just a fleeting moment, because they are so fearful.

All of us jeopardize our lives in various kinds of structures, and are exposed to fire hazards. We readily recall disasters like the Iroquois Theatre, the Collingwood School, the Newark Factory, The Ashe Building, the Binghamton Clothing Co., and the Arcade Lodging House. Great as has been the loss of life in these disasters, far more lives have been lost in fires where single persons or small groups are burned to death.

I want to emphasize one point, namely, that the man who has a factory or theatre, or who looks after an educational institution or an asylum, can readily be reached by legislation and inspection, and is subject to regulation, but the man who has a home in the city or on the farm, is practically free from supervision, and is rolling up the larger part of the death total. Spectacular disasters are horrible and arouse righteous indignation, but that same indignation at preventable loss of life needs to be directed at the citizen as well.

The principles underlying adequate exit facilities are very simple. I will guarantee to teach them in two hours to any bright fourteen-year-old schoolboy. There are only two fundamental principles. The first is that there shall be two ways out, and of course, that the ways shall be remote from each other and at least one of them safe from the fire and smoke. The second is that they shall be exits of adequate capacity. That is all there is to it, so far as the engineering point of view is concerned.

What does the man often face, who is caught in the upper story of a building, by fire breaking out below him? From the window sill, he faces a drop to the ground, twenty, thirty, forty or fifty feet, and we know how fatal jumping on cement pavements or stone-paved streets has proved to be; or he faces a situation where the fire escape is in one place and he is in another, and there is no way in which he can get to the fire escape; or he has access to a fire escape, which is small in area, provided with steep stairs, often vertical ladders, and certainly no place for many excited citizens to seek safety; or he faces the danger of a jump or drop from the lowest fire escape balcony, which may be as much as eighteen or twenty feet down a fire escape, no person can be relied upon to unhook the drop ladder promptly and to carefully start it down, and see that people swing over the railing gracefully and come down promptly and one at a time. It is substantially impossible to get those results in time of fire.

But the worst thing that the man in the upper story has been called upon to face has been the flame-swept fire escape. Those of us who have read Dante's Inferno realize with what skill Dante

painted pictures of fiery furnaces for the iniquitous. The grill and the spit have driven terror into the hearts of those who believe that such end awaited them if they did not live upright lives. Dante did not know that hundreds of years later a modern civilization in this country was going to install thousands, yes, tens of thousands of potential grills, upon which our men and women could and occasionally do perish.

When we are in the upper stories of a building that is on fire, what do we desire most earnestly? To get back to the ground. What do we do? We try our best to get there. How should we prefer to go? In the following ways:

First, we should love to pass through a fire wall into the adjoining building, close the fire doors, and walk downstairs or use elevators at some point remote from the fire.

Secondly, we should have a strong feeling of confidence and pleasure, if we thought that just around the corner was one of the finest inventions the State of Pennsylvania ever produced, the smoke-proof tower. We should hustle for that tower.

Third, we should be profoundly thankful if we had a good brick or concrete stair-well down which we might pass, especially if every opening into it was protected by a fire door. These are commonly provided in so-called mill constructed buildings.

Fourth, elevators would draw us as a magnet, especially if the building on fire was high, but we must recognize that elevators are a poor means of egress unless enclosed, of ample capacity, properly manned, and provided with power not subject to interruption by fire.

Fifth, we should turn with a sigh of resignation to an outside stairway or fire escape if it were broad and strong, had easy stairs led to many wall openings, had those windows or doors protected with wire glass and metal frames, and had at the bottom either a permanent stairway or one of those counterbalanced stairs which swings down when the first person steps from the platform.

These are the ways which we should be very happy to have available as exits, and the order in which these different sorts of exits are described, indicates approximately their relative value.

The average fire escape, so called, the rope for the individual room, the spiral chute that is used in some school buildings for exit of children, and other devices more or less used, would not appeal strongly to the man who wanted to save his life and do so surely and rapidly.

The greater the height of the building, the poorer the construction, the less the protection, the greater the manufacturing hazard—the greater the need of adequate exit facilities. For every situation there has been worked out a one best way. I believe that the reason we have

so many bad conditions is because people have been ignorant and indifferent. I do not believe that our people have any desire to jeopardize life. The situation is similar to that in the industrial accident prevention field. Only recently has the seriousness of the condition been realized.

I think we have in Pennsylvania not only adequate laws to enable the Department of Labor and Industry and the Fire Marshals to insist upon proper exit facilities, but I believe our Labor Department and our Fire Marshals are thoroughly alive to the inadequacy of many existing exit conditions. I hope that these constituted authorities will fight, if necessary, to enforce reasonable safety requirements; and I particularly hope that the men and women of the State of Pennsylvania, who in some of various ways have to do with the construction and operation of buildings in which lives are now jeopardized, will recognize their humanitarian responsibility, and no longer make it necessary for the constituted authorities to demand of them improvements, but will be willing to co-operate to make for safety. Co-operation here, as in other lines, gives the best results; in fact, it may be considered as the only way to get results, for no state can force upon its citizens, requirements with which the best element does not agree.

SAFETY LADDERS.

HALGER JENSEN, Supervisor of Liability Inspections, Maryland Casulty Co.

Almost everyone has enjoyed the pictures which appear in the different comic weeklies, illustrating the various stunts done with ladders or happenings due to them. Few, however, probably realize the importance of ladders in industrial accidents. A large percentage of avoidable injuries are due to ladders and the real cause in a great many other cases may be traced to ladders, although the immediate or apparent cause may be entirely different.

There is always an element of danger in the use of any ladder and a still greater danger probably from the absence of ladders, or where ladders are too short. In these cases the temptation is great towards using an empty oil barrel, nail keg or box, which furnishes a good way to increase the list of widows.

We might roughly divide ladders into three general classes:

1st—Those which are fixed and remain in one place.
2nd—Those which are portable and self-supporting.
3rd—Those which are portable, but which are not self-sustaining.

To the first class belong the longest ladders, such as stationary ladders on high stacks or leading to sprinkler tanks or roofs. They are usually vertical and as ordinarily designed, offer little or no opportunity to rest while climbing them. After ascending a hundred feet or more, the legs may become so fatigued as to cause cramps or loss of control of the nerves and an injury may result, which will doubtless prove fatal.

One of the dangers of this type of ladder, if constructed of wood, is the rusting of the nails used for fastening the rungs. Where the rungs are badly affected by the weather, it is safer to grasp the rails whem climbing, even if this introduces the posibility of getting slivers in the hand. Considering the rapid deterioration of wood, when exposed to the weather and the usual neglect of ladders, it is cheaper, as well as safer, to provide metal ladders.

Ladders should be placed in such a manner so as to obtain necessary foothold.

One habit which is fruitful in producing accidents is the carrying of tools or material when climbing. Where it is necessary to have tools or material, a hand line should be used.

Permanent ladders should be provided where portable ladders are now used, especially in places where it is necessary to reach a certain point without undue delay, for instance, to the top of steam boilers, etc.

The objection to permanent ladders is, in some cases, due to the possibility of intruders using them. This objection is overcome in a great many cases by a metal screen frame, hinged so as to cover the lower section of the ladder to a height of not less than six feet and making it posible to have same locked, so as to be accessible only to the proper persons.

New stationary ladders should be constructed with a cage and with landings, say every twenty feet. These cages can also in many places be applied to existing ladders.

Belts, such as are used by linemen or window cleaners, should be used wherever cages are not provided.

The rails on stationary ladders should also be carried at least two feet beyond the top landing.

To the second class belong stepladders and scaffold ladders. Of these, stepladders are probably the most productive of injuries. After looking over the ordinary stepladders one can but wonder that accidents from stepladders are not more frequent. A large

proportion of stepladders obtainable are unfit for use, even when new. Many are of such frail construction that they are broken before being delivered to the purchaser. This is especially true of the type in which the rails and back are constructed of a large number of small pieces so assembled as to give a maximum of strength with a minimum of weight. While these features are, of course, highly desirable, they cannot be afforded at the expense of ruggedness.

Special attention should be given to the wood used in stepladders. The grain should be straight and the wood should be free from knots. It should be elastic without being too springy and should break slowly rather than snap off short. Northern spruce, fir and certain kinds of pine are, no doubt, the best for this purpose.

The method of fastening the steps is important. Each end of each step should be bolted to the rails or the rails should be bolted together under each step. The rails should be slightly notched to receive the edge of the steps. The spreaders should be of wrought steel and the hinges of malleable iron and should be substantially constructed to prevent unsteadiness, as a shaky stepladder is a very treacherous tool. The back rails should be made of the same material as the front rails. Another factor in the stability is the spread of the legs and back. Of course, the height is extremely important. A twenty-foot stepladder surely cannot be considered safe. We may not be amiss in saying that a stepladder can be used safely only up to a height of twelve feet.

The third class includes portable ladders, not self-supporting. There are a great many more of these in use than any other type. They are frequently made of a couple of sticks with cross pieces nailed on the front in such a manner that the entire weight comes on the nails.

The rails of new ladders are sometimes so warped from the weather or heat that they cannot be rested against a wall with both rails touching and both feet on the ground. Such a ladder is naturally very "nervous" and if the rails cannot be straightened, a ladder of this kind should be destroyed.

The number of ladders in use and in defective condition and unsafe, appears from observation to be close to nine out of ten. This may not be a correct proportion, but we are probably not exaggerating when we say that at least five out of ten are direct invitations to disaster.

The usual defects are weak, broken or split rails, broken or missing rungs, poor methods of fastenings rungs, thus leaving them loose and causing unsteady ladders.

The type of construction and the materials used are, of course,

of great importance. However, probably the majority of the defects in ladders are due to the abuse to which they are commonly subjected. A poor type in good condition is far safer than a good type in bad condition.

In the selection of wood for a steady ladder, the same principles are involved as were outlined for step ladders. As suitable material for rails, we would suggest northern spruce, Oregon pine, yellow pine and for rungs—oak and hickory. The rungs should be round and inserted in holes in the center of the rails. A finishing nail driven through the rungs and rails at each end will make the rungs secure. Wedges are sometimes used in the ends of the rungs. This is not considered good practice, as the wedges will work out, making the rungs loose and the ladder unsteady. Again, when wedges are redriven, they often split the rails. Portable ladders should be made as strong as possible without being unduly heavy. Twenty-six to thirty feet length of ladder is about the maximum that can safely be handled. The vertical distance between the rungs should not exceed twelve inches. The width of the rails at the bottom has to vary, of course, according to the length of the ladder to be safe. Eleven inches is probably the minimum width that should be used between rails of any ladder which might vary from fifteen to twenty-four inches at bottom according to height.

The bases of portable ladders should be equipped with spiked feet for soft ground. Non-slipping shoes should be provided for hard and smooth flooring. There are various types of hinged shoes made for ladders, some are faced with rubber, lead or carborundum. Bass wood also makes a good footing. These shoes should be made light, so as to prevent unnecessary weight to the ladder. In other cases, the possibility of the slipping of a ladder can be taken care of with hooks at the top ends of rails, as with shafting ladders. Great care should be taken at all times to prevent the danger of ladders slipping. Where there is any possibility of this, it is well to get someone to hold the ladder.

A person should never face away from the ladder, when descending.

The necessary angle at which a ladder is placed should be given due consideration at all times. The raising of a twenty foot ladder under a ten foot ceiling is not desirable.

It is not at all an easy matter to get a good portable ladder. It is well to purchase from the most reliable manufacturer. Get the best he makes, for it won't be any too good. The last place to practice economy is in the price of a ladder. Ladders should be delivered unpainted, so that the material and workmanship can be ascertained.

Frequent and regular inspections should be made of all ladders on premises.

The numbering of ladders appears to be a very good way of checking up defective ladders and preventing their use until properly repaired or destroyed.

There is no doubt but that most ladder injuries, like most other injuries, are due to carelessness. This is not a very comforting conclusion, as it is far easier to correct a physical defect than to reform all of the unfortunates who may use ladders. However, the first step towards reducing ladder injuries is to eliminate unsafe ladders and the superstition of the ancient "safety first" man, who started the idea of it being unlucky to pass under a ladder, is not to be dealt with lightly, as many an accident is recorded from a person being struck by a falling tool or by material from a careless workman working on a ladder above. The placing of portable signs underneath ladders, giving warning by stating *"DANGER ABOVE"* is a very effective means of dealing with this situation.

SAFETY SECTION.

Thursday, November 19th, 1914, 9 A. M., Continued.

C. L. Close, Manager of Bureau of Safety, Sanitation and Welfare, United States Steel Corporation, Chairman.

The CHAIRMAN:

The next subject on the program is "The Safe Use of Explosives," by Mr. Harrison Souders, Superintendent, Cornwall Ore Banks Company, Cornwall, Pa. I take pleasure in introducing Mr. Souders to you.

THE SAFE USE OF EXPLOSIVES.

HARRISON SOUDERS, Superintendent, Cornwall Ore Banks Company, Cornwall, Pa.

I have been requested by Dr. Jackson, Commissioner of Labor and Industry to address this meeting on the use of explosives. In our operations at the historic Cornwall Iron Mines, some 35 miles from Harrisburg, we use, in the course of a year, many carloads of high explosives and it therefore seemed an easy proposition to prepare a paper on the subject. I found, however, after I began jotting down notes in regard to the use of explosives, that the subject was

a pretty big one and that the twenty minutes time allotted for its presentation would allow only for a brief resumé of the more essential features and some details of our practice at Cornwall and elsewhere.

To those who wish to go further into this matter, I would suggest that they secure the most excellent papers on the qualities and uses of explosives, published by the U. S. Bureau of Mines and also the booklets issued by the prominent manufacturers of explosives, to which I give credit for the statistics and some of the facts presented herewith.

The manufacture and use of explosives dates back many centuries and as is the case with other modern utilities, the Chinese claim to have been the inventors of the oldest kind of explosives, that is gun powder. The discovery of nitro-glycerin, which is the base of most of our modern high explosives was made in 1847 and has been credited to one Sobrero. Its application, however, to practical commercial use was first made about 1865, by Mr. Nobel, a Swedish engineer, who may therefore be called the father of dynamite.

The most stupendous use of explosives known in the history of the world is now going on in Europe and the terrible destruction of men and material wealth being wrought thereby, will be felt over the entire world for generations to come.

It is not our intention, however, to discuss this use or "abuse" of explosives but to confine ourselves to their use for constructive or peaceful purposes.

For the purposes of this paper we shall accept the Bureau of Mines' classification of explosives, viz:

1. Black blasting powder. All black powder with sodium or potassium nitrate as a constituent.

2. High explosives. Dynamite and all other high explosives of various trade names and compositions except permissible explosives.

3. Permissible explosives. In this class are included ammonium nitrate explosives, hydrated explosives, organic nitrate explosives, and certain nitroglycerin explosives containing an excess of free water with carbon. All permissible explosives have passed certain tests of the Bureau and are not to be regarded as permissible unless used in the manner specified.

In the trade, but two classes are distinguished, namely, (a) High explosives or those which can be properly detonated only by means of an intermediate agent such as a blasting cap or fuse and not by simple ignition.

(b) Low explosives (blasting powder, etc.).

High explosives differ from low explosives in that they detonate with much greater rapidity and (with the exception of permissible

explosives) have more of a shattering effect. Of the many properties that contribute to the effectiveness of high explosives, the most important are strength or disrupting power and quickness or shattering power. Other factors to be considered are stability or keeping qualities and those qualities that tend to make them safe to handle, the fumes evolved and also their resistance to cold and to water.

The production of explosives in the United States has assumed large proportions. In 1913 the production was 463,514,881 pounds or 231,757 short tons. Of this

Black powder, ...	194,146,747 lbs.
High explosives, ...	241,682,364 lbs.
Permissible explosives, ...	27,685,770 lbs.

our own State of Pennsylvania stands first in the amount of explosives manufactured and used (not including exports) with

Black powder, ...	64,173,175 lbs.
High explosives, ...	36,532,915 lbs.
Permissible explosives, ...	9,836,050 lbs.
Total, ...	110,542,140 lbs.

or about 24 per cent of the total for the United States. The decrease in the amount of black powder in this country for 1913 as compared with 1912, was 36,146,622 lbs., increase in high explosives, 7,212,872 lbs., and in permissible explosives, 3,055,500 lbs., indicating that the efforts towards efficiency and safety in the use of explosives are bearing fruit.

We shall give some statistics showing amounts and kinds of explosives used for various purposes, in 1913, for the United States and for Pennsylvania:

United States: Coal mining, 209,352,938; other mining, 103,704.-626; railway and construction, 42,480,756; all other purposes, 107,-976,561.

Pennsylvania: Coal mining, 88,940,451; other mining, 712,170; railway and construction, 6,247,401; all other purposes, 14,642,078.

Mining and quarrying operations, especially coal mining, consume the greater portion of explosives, as we noted in the table above. Pennsylvania as we know is the biggest producing state in this country. It is the coal mines that take the biggest toll of life and a good percentage of fatalities comes from the careless or improper use of explosives.

The figures below give the number of fatalities due to explosives in coal mines in the United States and Pennsylvania, also the tons of coal per pound of explosives in 1913:

Pennsylvania: Coal produced, short tons, 265,306,139; explosives used, 88,940,451; fatalities, 79; fatalities per million lbs. explosives, 0.89; tons coal per lb. explosives, 2.98.

United States: Coal produced, short tons, 570,048,125; explosives used, 209,352,938; fatalities, 138; fatalities per million lbs. explosives, 0.66; tons coal per lb. explosives, 2.72.

The coal extraction per lb. of explosive was as low as 1.11 tons in some states; the highest was in Ohio with 5.84 tons per pound explosive. These figures bring out two facts, namely: That the fatalities due to explosives in coal mining in Pennsylvania are considerably greater than the average for the United States, and furthermore that while the tons of coal won per pound of explosive is somewhat higher than the average, yet it is but half as much as is obtained in some other states. This would seem to indicate that there is room for improvement in Pennsylvania's coal mining methods.

Fatal accidents of all kinds in mines and quarries of United States in 1913:

	Employed	Killed	Killed per 1,000 employed	Fatalities due to explosives
Quarries,	106,278	183	1.72	24.04%
Metal mines,	193,088	683	3.54	12.88%
Coal mines,	747,644	2,785	3.73	4.95%
Totals,	1,019,086	3,496	3.43	.....

Accidents due to explosives vary in quarries from 22 to 26 per cent of the total, six times as great as in coal mines and twice as large as in metal mines. In France only 10 per cent of accidents in quarries are due to explosives.

Personal experience with men long accustomed to handling of explosives, both in mining and other operations, teaches that such men unless kept under constant supervision and check, grow careless in handling such material through long familiarity with it. This would account for some of these accidents. I believe a larger percentage can be accounted for by the fact that too many men have to do with the handling of explosives, it being the general custom especially in coal mines and smaller quarries, to allow each miner to do his own blasting.

The method prevailing in many metal mines and quarries and in force at Cornwall, is to have one man only, in charge of the powder

and dynamite. He deals it out to certain experienced men known as blasters who do all the loading and blasting. These blasters become very expert and secure better results for the powder used. Also it means fewer men to teach and fewer men to supervise, and it concentrates responsiblity for accidents.

A most encouraging sign is the diminishing use of black powder and increasing use of permissible powders in coal mining.

A number of years ago, investigations were begun by various governments to determine the causes and means of prevention of numerous fatal explosions in coal mines. This work in this country is now in the hands of the Bureau of Mines. I quote from a report: "At the beginning of this work a few years ago, black powder with its long hot flame was in general use in the coal mines of this country, even in mines where the presence of inflammable gas and coal dust rendered its use dangerous. The investigations made and now under way, have brought about the use in these mines of a new type of explosive with a short and relatively cool flame. This explosive is now designated as a permissible explosive. Its use has aided in the reduction not only of the number of mine disasters but also of individual accidents."

In 1902, only 11,300 lbs. of permissible explosives were used in coal mining in this country; in 1913, 21,804,285 lbs. were used. Of the 209,352,938 lbs. of explosives used in 1913 in mining coal, 10 per cent were permissible explosives and few if any serious accidents have been attributed to their use.

The writer had the pleasure of visiting some weeks ago the experimental mine of the Bureau of Mines near Pittsburgh, and of witnessing a test demonstrating the explosibility of coal dust when stirred up and ignited by an explosion of black powder. In this test but 4 pounds of black powder were used and the tremendously destructive effect of the exploding coal dust was evidenced by the way in which timber and bratticing were demolished and scattered about, far from the immediate scene of the explosion.

In a dusty mine such as was here simulated, the use of a permissible explosive properly placed in a drill hole with sufficient stemming over it, would have brought down the coal without exploding the coal dust.

The question of proper quality and amount of "tamping" or to use the term more recently adopted "stemming" to be used in blasting a bore hole, has been demonstrated to have considerable bearing on the efficiency and economy of explosives used. Common black blasting powder on explosion produces 390 times its volume of permanent gases; 40 per cent dynamite, 350 times; nitro-glycerin, 747 times its volume under normal conditions of temperature and pressure. At the moment of explosion, however, the gases are highly

heated and therefore tend to occupy a much larger volume, therefore a slow burning explosive such as black powder needs a considerable amount of stemming; the quicker acting dynamite needs less.

Actual experience shows that plenty of well tamped stemming in a hole gives much better results than are secured where little or no stemming is used. Experiments with 40 per cent dynamite brought out the fact that the best results were obtained by stemming with moist fire clay or moist sand, and that in comparison with unstemmed shots, small quantities of stemming increase the efficiency from 15 to 87 per cent.

In our work at Cornwall we find that six to twelve inches of moist clay placed next to the dynamite charge in a drill hole, backed up with soft ore or sand, gives the best results. In coal mines as large amounts of stemming should be used as is possible, to increase the efficiency and safety in blasting.

The selection of the proper kind of explosive for a given purpose is most important. Explosives suitable in quarry work where poisonous gases are soon dissipated would not be suitable for deep mine workings nor for submarine blasting. In dusty or gaseous mines explosives specially compounded to meet these conditions should be used.

In cold climates explosives not requiring thawing should be provided where possible. Where it is not desirable to shatter the material, such as is the case in slate or marble quarries, slow explosives should be used. In mining in soft ores or clay banks where simply a heaving effect is wanted, slow explosives should be used. When the rock must be shattered and broken to the smallest sizes so as to facilitate quick handling for the stone crusher or for steam shovel work, then a quick acting explosive is desirable.

Next to coal mining, the use of explosives in mines or open quarries of iron ore, cement rock, limestone, etc., is most important. An interesting development in these later years in open cut or quarry work, has been the introduction of "deep hole" or "well drill hole" blasting. This method has also been adopted in railroad or other construction work requiring the breaking down of large masses of rock or other material ready for rapid handling in large volumes by means of steam shovels. In this way great output can be maintained at a minimum expense of time and labor. Depending on the character of the rock, these drill holes, generally about 6 inches in diameter are spaced from 10 to 20 feet or more apart, and are often from 20 feet to 180 feet deep. In the large cement or limestone quarries, the general practice is to drill a single row of holes, 10 or more in number, along the quarry bench, 10 to 18 feet back from the face and to load them with the required amount of explosive as

determined by practice to be best suited for the particular quarry and shoot them all at one time. The usual practice is to pump the holes free of water and load with 30 or 40 per cent dynamite, two or more electric fuses or exploders being placed in each charge of explosive. These exploders are wired up in series and where the number of holes is not over 15 or 20 the lead wires are connected to a push battery. Better practice in the larger quarries calls for the use of live current of 110 volts from an electric generator. Where live current was not obtainable, small electric plants have been installed to generate current for this purpose. The electric fuses should not be of less strength than No. 6 and better results are obtained with No. 7 or No. 8, since it is well known that the stronger the detonation of any explosive charge, the more efficient is the work done by it. These fuses should always be tested before using, with a galvanometer, to see that the exploder circuit is not broken. It is also advisable where much blasting is done with electric exploders, to have a wheatstone bridge or similar device to measure up the resistance of each electric exploder, using in any one shot only those exploders having the same electrical resistance. Especial care should be used in connecting the exploder to the priming charge, the customary way of taking a half hitch with the wire around the stick of dynamite is not to be recommended since in this way the installation on the wires is liable to be broken, or the platinum bridge in the exploder may thus be broken. Care should be taken in tamping not to break the insulation as this may cause misfires, especially in damp ground. Every precaution down to the last detail should be taken to prevent misfires.

A misfire, especially in deep hole blasting, is not only very expensive but also a source of danger when the rock or ore is being loaded, since a pick point or steam shovel dipper tooth is liable to strike the unexploded charge. Instances have occurred where as many as twenty people have been killed in this last mentioned way.

In the magnetic ore at Cornwall we have been especially troubled my misfires since the ore, especially when damp, readily causes short circuits. After many experiments in making simultaneous blasts of from 25 to 80 holes in ore and involving a dynamite charge of from 1,000 lbs. to over 4 tons, we adopted a system of connecting the holes in parallel, the current being reduced to 30 volts by means of a transformer, our lead wires being No. 12 gage. Each exploder is tested before using and again after it is placed in the hole and also after the hole is stemmed or tamped. Each connection is carefully made to the lead wires and inspected and when all is ready, the live current is admitted by means of a switch. About one ampere of current per exploder is used. Even with the utmost care all misfires could not be eliminated. Before loading the holes, an ac-

curate survey of the bench and holes is made, so that the proper charge can be figured and missed holes located.

As previously stated, 6 to 12 inches of moist clay is tamped over the charge and the balance of the hole filled with soft ore.

While studying this blasting problem of shooting large numbers of holes simultaneously, we learned about a new detonating fuse called "Cordeau Detonant." This consists of a lead tube 5 to 6 mm. in diameter, filled with trinitro toluene. This is an extremely safe material to handle and of very high detonating power. It has been used to a limited extent abroad and in this country mainly for military purposes. It is now being introduced in this country for deep hole blasting, and gives promise of becoming one of the most important helps towards safety in blasting that has come to our notice.

In using "Cordeau" it is attached to the first stick of dynamite which is then lowered to the bottom of the drill hole. The balance of the charge is then placed in the hole and stemming placed and tamped. The Cordeau thus runs through the entire charge of dynamite up through the stemming to the surface. A high power electric or other exploder is then attached to the end of it and fired in the ordinary way. Any number of holes can be connected by a main line of cordeau and all exploded with one detonator. This fuse has three important qualities, viz: 1—It is safe. 2—It is instantaneous. 3—It increases the efficiency of explosive charge 10 to 20 per cent.

In a paper read before the American Institute of Mining Engineers, last October, the writer described some experiences with "Cordeau" in blasting ore and cement rock, and will therefore not go into further details at this time. Owing to the war, imports of this material from France have ceased but I believe arrangements are being made to manufacture it in the United States. As soon as the makers can guarantee a uniform and reliable product, I anticipate that its use will become very general with consequent reduction in blasting accidents.

A necessary part of the equipment of a mine or quarry is a magazine for storing dynamite and also a thaw house for thawing dynamite. Selection for a site for a magazine is important. Advantage should be taken of any natural protection offered by hills or woods. It is also preferable to erect it on sandy soil rather than rock, so as to limit the distance to which earth waves will be transmitted in case of explosion. It should be far enough away from dwellings, railroads, etc., so as to do least possible damage. This distance will depend upon the amount of explosives to be stored and upon the amount of natural or artificial protection afforded. In Europe and in some of our own states this distance has been fixed by law.

The magazine should be built weather and bullet proof. No exploders or caps should be stored with dynamite or powder but should be kept in a separate structure at a safe distance.

Since dynamite freezes at about 45 degrees F., and when frozen can be detonated only with difficulty and with greatly reduced efficiency, it is necessary to provide means of keeping it thawed out during the cold season. Various satisfactory ways have been devised. The thaw house at Cornwall consists of a double walled framed structure, covered by galvanized iron, heated by a small hot water radiator placed in the middle. The dynamite is stored on wooden shelves placed around the walls so that none of it is over or near the radiator. The temperature is kept at about 80 degrees F. The stove is in a small building about 25 feet distant.

To meet the demand for a safe and efficient explosive for use in cold weather, the manufacturers have developed a low freezing dynamite. Very good grades, some of which can be used at temperatures below 30 degrees F. with satisfactory results, can now be purchased. Such dynamite is used almost entirely in winter at Cornwall.

Application of explosives to farming purposes has been much discussed in the last few years. For tree planting it is very cheap, efficient and quick. In one case brought to our notice, a New York farmer with 16 men planted 7,200 trees in 10 days, using half stick of dynamite to blast each hole.

A New York blaster cut a drainage ditch 3½ feet deep averaging 3½ to 4 feet wide and 600 feet long at a cost of 8c. per foot.

At Cornwall a sewer trench 2 feet deep, 3 feet wide was excavated at a cost of 6c. per foot.

Dynamite is used extensively for blasting out tree stumps.

An excellent way of exterminating rats with dynamite suggested by a Californian is to burn dynamite in rat holes using ordinary fuse, but no caps to ignite it.

A novel method of cutting off the top 40 feet of a 100 foot steel stack was used at Cornwall. Seven half sticks of 40 per cent N. G. Dynamite were strung around the stack like a necklace at the point at which it was desired to cut it off. These were fired with electric fuses and a push battery and cut the stack off with neatness, safety and despatch. Time will not permit us to describe the many interesting uses for explosives.

Most of the large mining corporations as well as the powder makers have gotten out safety rules for handling explosives. A list of "Rules" issued by the Cornwall Ore Bank Company is appended.

1.—Don't forget the nature of explosives. By sensible treatment they can be safely handled.

2.—Don't smoke while you are handling powder or other explosives, and don't handle powder or explosives so near a light that there is danger from the flame or sparks.

3.—Don't throw or allow packages of explosives to fall violently.

4.—Don't allow dynamite, powder or electric fuses or blasting caps to lie around loose in places where you are working.

5.—Don't carry blasting caps or electric fuses in your pocket, and don't tap or otherwise investigate the same.

6.—Don't use a short fuse to hasten explosion, or with the idea that it is economical to do so.

7.—Don't drill, bore or pick out a charge which has failed to explode. Drill and charge another bore hole at least two feet from the missed one.

8.—Don't use frozen or chilled explosives. Dynamite other than Red Cross often freezes at a temperature between 45 degrees and 50 degrees F.

9.—Don't allow thawed dynamite to remain exposed to low temperature, but use as soon as possible.

10.—Don't allow priming (the placing of a blasting cap or electric fuse in dynamite) to be done in a thawing house.

11.—Don't prime or connect charges for electric firing during the approach or progress of a thunder storm. If already primed, keep everybody away until the storm is over.

12.—Don't store or transport blasting caps or electric fuses with high explosives.

13.—Don't worry along with old, broken leading wire or connecting wire. A new supply will not cost much and will pay for itself many times over.

14.—Don't operate blasting machines half-heartedly. They are built to be operated with full force. They must be kept clean and dry.

15.—Don't tighten a cap around a fuse by biting it with your teeth; use a cap crimper for that purpose. Don't attach the fuse to a cap carelessly.

16.—Don't fire a shot before everyone is out of danger and protected from flying debris. Protect your supply of explosives also from danger from this source.

17.—Don't thaw dynamite on heated stoves, rocks, bricks or metal, or in an oven, and don't thaw dynamite in front of, near or over a steam boiler or fire of any kind.

18.—Don't use any caps weaker than No. 6 for block holes and mud caps. For well drill hole blasting use No. 7 or No. 8 Electric Exploder.

19.—The man responsible for blasting must assure himself that there are no misfires.

20.—A series of sharp blasts must be given with whistles of either locomotive or steam shovel as a general warning that blasting is going to be done in that territory.

21.—When bulldozing is to be done directly in front of a shovel, no one must remain on or under the shovel for protection.

The CHAIRMAN:

I have the pleasure of introducing Mr. A. LaMotte, of the Technical Division of the du Pont Powder Compay.

MR. A. LaMOTTE, Technical Division, E. I. due Pont de Nemours Powder Company, Wilmington, Del.:

There are two thoughts that occurred to me during the meeting today in connection with the explosives industry especially, which can be put very briefly. One of them is, that it seems to me that the regulations and laws that are being made at present are sometimes made without due regard for what is known on the subject by the manufacturers. The manufacturers are in a position to know more about what explosives will stand than the average layman, and some of the laws which are proposed and some of them which are on the statute books are rather weird. For instance, only lately there was a law passed by one state—not Pennsylvania—which required that the tamping stick used in loading dynamite shall be of copper. I believe that was supposed to be a safe measure, that otherwise they would use steel. Wood and only wood, without any metal whatever, is usually recommended and insisted upon. This state law requiring the use of a copper tamping stick was rather unusual.

Another law which is in force in some of the states, and which Mr. Souders alluded to, fixes the minimum distance of storage magazines from dwellings, roads and railroads, which is all well and good as far as it goes; but, notwithstanding, it does not specify the material out of which the magazine shall be made. I recently saw a magazine in a New England state which was within the legal limit with regards to amount of explosives contained and distance from any dwelling, road or railroad, but it was made of a material—flat dressed stone laid flat in the magazine which would become so many projectiles in case of explosion and would be infinitely more dangerous to surrounding property than if made of a suitable material at one-half or one-third the distance to the nearest dwelling or railroad. For instance, there is nothing in the law to prevent you filling

the walls of a magazine with shrapnel bullets if you wish to, but you can readily see how unhealthy that would be. The ideal magazine constructed is one worked out by manufacturers and users of high explosives for a number of years and is, briefly, a very light construction of wood surrounded by a very substantial earth barricade.

There is very little use in trying to mitigate the number of accidents in the use of explosives by regulations and laws. The green man is always trying to show off that he is brave or that he is not afraid of dynamite, and the experienced man is suffering from what might be called fear of being afraid, afraid of being thought overcautious; and these two very human defects have got to be dealt with individually. There is no possibility I can see of any laws being applied to cover these cases.

The CHAIRMAN:

Are there further remarks?

MR. J. R. PATTERSON, Inspector, Department of Labor and Industry, Beaver Falls, Pa.:

I think that companies that are operating large quarries should have direct charge of all blasting. I speak of this from the conditions that I find prevailing in a good many limestone quarries in the western part of the State. I find that there is a condition existing there by which they contract all of the quarrying of the stone, or, in other words, they will lease out or contract out a ledge of rock, possibly one hundred feet, to one contractor, the next hundred feet to another contractor, and there is no system used in firing their shots. I was crossing the quarry at one time and got between two shots. There is no system at all. I think that the companies should have full control of all the shooting and contract the loading. I took this matter up with the superintendent of the company that I met there and he said, "Well, we desire to do that, but if we undertook to do it, they would strike." I think there should be some law to regulate this matter, at least in limestone quarries for the reason that the company should have full charge and control of the shooting.

The CHAIRMAN:

It is true of coal mining, that the company has charge and control of the shooting. Are there any more remarks on this subject. If not, the meeting will stand adjourned.

(Whereupon, at 11:55 o'clock A. M., the session adjourned.)

GENERAL SESSION.

Thursday, November 19th, 1914, 2 P. M.

James H. Maurer, President, Pennsylvania Federation of Labor, Chairman.

The CHAIRMAN:

The first speaker this afternoon will be a member of the Industrial Board. Before introducing the speaker I feel that I would be an ingrate if I failed to say a few words of appreciation about the Department of Labor and Industry. Only those who have been familiar with the old Department and with the new, are really in position to appreciate the services that the new Department is now rendering the people of the State. I have been closely associated with this Department since its creation, and the sincerity, the earnestness of the officials is really commendable. I would not be doing my full duty if I failed to mention this to you who are not so fortunately situated as I am. I found the Commissioner and every other official in his Department eager to serve in any capacity and making earnest efforts to comply with every request for assistance or advice. I have not a single criticism to make but congratulate the people of the State on the efficiency and the splendid service that is being rendered by the Department of Labor and Industry; and I believe that if all of us encourage this Department in its good work and assist it, we can expect a great deal better results in the future.

I wish once more to impress upon you the necessity of encouraging your Legislature at the coming session to increase the number of deputy inspectors. A state like Pennsylvania, one of the largest industrial states in the Union, could not get along with fifty inspectors. It is a mistake. We cannot hope that these fifty people can give us the service that we all expect to have, and I believe if all of us would take this question up with our representatives, that we shall have such provision made at the coming session.

Without any more remarks, I shall introduce to you a member of the Industrial Board as the first speaker, Mrs. Samuel Semple.

A WOMAN'S VIEW.

MRS. SAMUEL SEMPLE, Industrial Board, Department of Labor and Industry.

Time was when legislation was for the benefit of the official class—when an extra turn of the legislative screw produced revenues for a king, or estates for a king's favorites. Legislation as an implement for the good of the people is a modern invention. To the seventh Earl of Shaftesbury (Anthony Ashley Cooper) we owe much of the discovery of the uses of social legislation; and to him England owes more in the successful initiation of reform through social legislation than to any other one man of the nineteenth century. In this use of legislation the United States has lagged behind Great Britain. While Great Britain was engaged in the beginnings of child labor legislation, the United States was busy in working out the very important piece of social legislation involved in the establishment of a republic. When England came to a later period of labor legislation, the United States was again busy with the special social legislation which culminated in the Civil War. In very recent years, the United States has taken up general social legislation, and has pursued it at what some people consider a dangerously rapid rate.

One interesting phase of such legislation in this country has been the formation of departments under state governments as the Department of Labor and Industry has been formed in Pennsylvania. Because material in the following states was easier of access, and also because of their scattered and representative locations, I have selected four states—Massachusetts, Ohio, Oregon and Missouri—of which to speak in this connection.

In *Massachusetts,* the department is known as the *State Board* of *Labor* and *Industries.* Things that stand out in its plan are, its power to investigate outside of the State for the benefit of its State industries; and its creation of a division of Home Work—practically Factory Inspection Extension. In these meetings much has been said against the permission of home work. Massachusetts frankly admits the existence of home work, and attempts to bring home sanitation up to a standard that will protect it.

The *Ohio Industrial Commission* grew out of the conviction that modern business methods should be applied to the business of the State, and represents the combinations of several old departments. Its distinguishing feature is really its Workmen's Compensation provision, practically a method of state insurance. One feature that I covet for Pennsylvania is the motion picture film censorship, which, in that state, is placed where it seems to me it belongs—under the Industrial Commission.

Emerson said no civilization could rise higher than its women. The *Oregon Industrial Welfare Commission* seems to recognize this

because it is concerned with the women and children of the state who are engaged in industry. Its distinctive work has been the establishment of a minimum wage for women—an experiment so far, but one that is being watched with interest. The Board considers hours, working conditions, and wages as parts of the same problem. The minimum wage varies with the employment, and with the working conditions. An interesting side feature of this Oregon department is the relationship with the great national organization, The Consumers' League. It is conceded that the Commission was created as a result of the League's work; and, in response to a query to the State itself as to the workings of the Commission, the League's report was sent as a reply.

In *Missouri,* the *Bureau* of *Labor Statistics* working with the Board of Mediation and Arbitration is the point of attention, and one of the most vitally interesting departments in the material it sends out. Its specially desirable feature is its system of Public Employment Agencies, again something to be coveted for Pennsylvania.

In *Pennsylvania,* the *Department* of *Labor* and *Industry* comprises Bureaus of Inspection, Statistics and Information, and Arbitration, and—the Industrial Board.

In all the instances cited there exist certain similarities, and—on analysis—certain things become apparent.

First, it is apparent that in state legislation (as well as in national legislation referred to by Dr. Post) labor has come to its own, and is recognized as a factor in public affairs. Employer and employed, as such, are officially represented in all these departments.

Second, women in industry are frankly recognized. Public discussion sometimes assumes that women in industry are an anomaly, or a temporary quantity, or endeavors to show that they should not be so employed. But this legislation frankly recognizes that they are already in industry; that they are likely to stay there; and that, being there, they need the protection of special representation in these state departments. My own illogical feminine mind cannot resist the temptation to push this one step farther, and ask why women in industry would not be still more adequately protected by giving them the representation involved in enfranchisement.

Again there is, throughout, the recognition of legislation as a social agency; and, beyond that, of the fundamental character of the social service that has to do with the question of employment or industry.

Against this general background comes the question of the place and the mission of the Pennsylvania Industrial Board. I take it that these are to standardize inspection; to relieve the law makers of the cumbersome task of making laws so minute in detail as to cover every imaginable case; to relieve the state of the cost of prolonged

legislation; to protect those in industry from the necessity of waiting unduly long periods for legislative repeal of regulations that may prove to be harmful rather than helpful; and to achieve results without the necessity of too exact prescription as to methods of procedure. Just as the popular writer, Miss Zona Gale, in a Friendship Village Story, describes how a woman suddenly discovered that club work was not merely details of neighborhood improvement, but effort toward bringing in the Kingdom of God on earth; so to me, a woman, the Industrial Board seems a modern implement to be used toward the present realization of that Kingdom of God.

The CHAIRMAN:

The next subject for discussion is that of "Workmen's Compensation." While I believe that all of us present agree that the State should adopt a Workmen's Compensation Act, there might be a difference of opinion as to just the kind of an act that should be adopted. We have heard much the last three days on "Efficiency," "First Aid to the Injured" and subjects of that kind, and the speakers usually referred to it as not a question of sympathy or sentiment but of economics and business; and I hold that the question of Workmen's Compensation, while it is sentimental, of course, to a very great extent, yet it is more of a cold blooded business proposition after all. Ever since this State has been inhabited by man, the burden of accident has been borne by the unfortunate one that was injured, and the idea that it shall continue is not only wrong, morally wrong, but it is extravagant, criminally extravagant even from a business point of view.

When a bread winner, whether it be father or mother, is killed and the dependents are left at the mercy of charity or public institutions, or a society, experience has taught us it is a very expensive method of supporting dependents, and we also find that all are not provided for by these institutions. I have in my pocket a newspaper just handed to me today where up in Washington County at the last criminal court session, twenty-six women were sentenced to serve from three to six months in the county jail for selling liquor illegally; and on investigation it was found out that these twenty-six women were mothers; some had one child, some six; an average of three children for each of the twenty-six women. The court was somewhat embarrassed in making the sentence; it hardly knew just how and what to do with the children. But we investigated to see what the trouble was with the women, why they should sell liquor illegally, and we found most of them were widows of men who were killed in the mines or the wives of men who were disabled and could not work, and therefore they had to go into some kind of business in order that they might eke out an existence. Then these laws stand ready to prose-

cute, if necessary, the victims of society's own creation. We found other cases where the widow and children are left dependent on their own resources and the children grow up as weeds. A mother that must go to the workshop to support a family cannot be expected to rear those children as they should be reared. If they chance to escape their environments, why, all right; but if they fail to escape and are victims of their environment; then the State has millions, if needs be, to persecute, prosecute and punish these victims of its own creation. Therefore, Workmen's Compensation appeals to me strongly even from a business point of view.

Cast aside all sentiment. Divide the burden of the injury and let the State or some uninjured person who benefits by the wealth created by the worker, bear the financial burden and see that the families are not pauperized when the bread winner is taken away in the creation of the State's wealth. Provide for that family so that widow can remain with her children and raise them as they should be raised, because the children of today are the rulers of our State tomorrow. Workmen's compensation aims to do that. Society has not the right to take the energy and life in man and woman and not be held responsible for what it has taken. The State has recognized this.

Four years ago Governor Tener by joint resolution appointed a Commission to draw up a Workmen's Compensation Act and have it prepared for the following session. The Commission was appointed and the Commission held public meetings all over the State. I have attended most of the meetings they held. They drew up tentative drafts of bills and submitted them to the public by thousands and invited criticism which was offered at the public meetings held. They changed their draft, I think at least seven times if my memory serves me rightly and finally had what we must agree was the best we can hope to get at present and the bill was introduced in this House in the 1913 session. It passed this body, the lower House, without any serious opposition, but met its defeat in the Senate by being amended so as to make it practically worthless. The Commission is still in existence.

MR. FRANCIS FEEHAN, Member of the Pennsylvania Industrial Accidents Commission:

Where compensation laws have gone into effect accidents have been greatly reduced. This information has been obtained as the result of careful study and investigation of the operations of acts in other states and countries.

I do not know who was the first advocate of transferring the care of our industrial, workers and their dependents from the working peo-

ple themselves and from those who are willing to distribute charity to them, to the public in general or to the industries. Twenty-five years ago, at a place where I worked, the workers felt that it was their duty to care for the injured and their dependents, out of the wages they received from the companies. That was a recognized principle even among the working people in general. I recall the first time I listened to one of our fellow workmen who after having contributed a large portion of his earnings to caring for those who had met with serious accidents and the dependents of those who had met with fatal accidents, spoke at a meeting called to consider the question. He was the first one to impress me with the importance of changing our entire system; and he advocated that when a workman was killed or seriously injured at the place where he was working, the company should be required to take possession of his body and care for it and see that it was provided for. Twelve fatal accidents had occurred that month and the assessment was fifteen dollars for those alone, not including other accidents.

As the result of this man's declaration, he was compelled to leave the place. The workmen themselves resented such a statement and he was driven from the community. From that time on I have witnessed the change taking place and the agitation growing for a change in the system of caring for our industrially wounded. I have been unusually fortunate in studying conditions as a labor official, serving on the commission to prepare labor laws under Governor Stuart, and under the present commission and during the administration of Governor Tener. I have witnessed our greatest industrial catastrophes and have visited the places and seen the effects of those accidents. I have seen agitation growing for this great reform because the facts stand out very forcibly that when the employers in general are required to pay direct compensation to support and maintain the dependents of those who meet with industrial accidents, then the more precaution will be taken.

A wrong impression prevails that the employers have not done all that they could, in many instances, towards accident prevention. We have on both sides, capital and labor, the defenders of this great reform. It is gratifying to know, after all the agitation, that it has now reached the place of the most important question before the public.

The CHAIRMAN:

We shall now call upon Mr. F. W. Walker, President of the Manufacturers' Association of Beaver County, whom I now have the pleasure of introducing to you.

Mr. F. W. WALKER, President of the Manufacturers' Association of Beaver County:

What I say on the subject of compensation will have no bearing upon either the legal or insurance side of the question, but will be simply from the viewpoint of a manufacturer. I believe practically every manufacturer in the State, is in favor of Workmen's Compensation. If the Bill, as drafted by the Industrial Accident Commission, is the best we can get for this great Commonwealth, it should be enacted by the legislature at its next session. We recognize the necessity of making a start at this time, but I feel there are some amendments that can be made to this bill which will better define the intent of the act, lessening the opportunity for misunderstanding, and I believe when properly presented to the Commission, that it will recognize the fairness of the suggestions, and the necessity of incorporating them in the bill.

The Commission bill shows careful study of the subject, and it is to be commended for the excellent work it has done. I understand that it has drafted the bill to avoid constitutional questions, which no doubt accounts for not taking a stand for the most advanced views on compensation, based upon the experience of other states. We should have a law that will give the greatest amount of compensation at the least possible cost. If this cannot be done under existing conditions, then the constitution should be amended so that this great industrial State can be in the van.

We have not had the experience with compensation in this country that they have had in Europe. Compensation in Germany is paid from a fund controlled by the Government, and I feel that this system brings the employer and employee nearer to the full benefits than does the English system which places the responsibility upon the employer, the plan recommended by the Commission. We could not, however, adopt the German system under our constitution.

The principles of Compensation, if logically analyzed, will be discovered to have a sound basis. But I feel that the manufacturers are taking on a burden without being relieved of many of the objectionable features of existing laws. The ambulance chaser may be eliminated to a certain extent, but the bill does not obviate the settlement of disputes in court, which are annoying and costly to both parties. There are features in the bill that may become a heavy burden upon the small manufacturer. His credit may be seriously affected. It does not secure Compensation from the bankrupt who has been carrying his own risk. It does not protect against a mortgage which may cover the entire value of the plant, if placed on file previous to an injury.

In other states, the Commissions have had to make many investigations and render decisions, defining the liability and compensation to be paid, without cost to either party. This act creates no com-

mission, but takes the contestants into court, thereby delaying the compensation at a time when it may be badly needed.

The main objection raised against Compensation, that the employer is deprived of his property without due process of law, is one that will not bear close analysis. More readily than before can he estimate his probable accident costs; in fact, he knows exactly the amount to add to the cost of his product, which finally passes on to the ultimate consumer, who bears the burden, although so small that it is not noticeable.

Under our present laws, it is practically impossible to make an estimate for cost purposes, and the burden might become a very heavy one upon the small manufacturer. Most of the states having Compensation laws make it elective as to whether the risk shall be carried by the individual, by liability insurance companies, or by payment to a State fund. So far as I know, Ohio, West Virginia, Oregon and Washington are the only States having compulsory State Insurance. Ohio's first act was an elective State Insurance, but was changed to Compulsory State Insurance. I find the opinion among Ohio Manufacturers, favors compulsory State Insurance.

In my study of the subject, I lean strongly to State Insurance as being the most economical and least annoying to the beneficiary. The individual risk or insurance companies, even with the best of intentions, will always be self-interested, an attitude which, under the most careful supervision, cannot always be kept out. With the State fund, the selfish interests are out of the way, and it is to the employers advantage to assist in an honest adjustment.

The State of Wisconsin's Compensation Act, provides for individual, Mutual and Stock Company Insurance, which is practically the provision in our proposed law, with the addition that we provide for a State Fund also.

The very able and complete report of June 30th, 1914 on the Workmen's Compensation of Wisconsin shows that the compensation has given general satisfaction. However, the premium rates are higher than in many other states. The Bureau rates are used as a basis by the mutual companies at about 40% less than the Bureau rates.

The Wisconsin report complains of the exorbitant rates of the Conference or Bureau Companies, giving the apparent reason for lower rates in Massachusetts, that the Employers' Insurance Association forced the rates down.

Bureau rates for sash and door manufacturers in seven states vary per hundred dollar pay-roll from $3.75 in Illinois to $1.80 in Massachusetts, and for machine shops from $2.50 in Illinois to $.80 in Massachusetts. State Insurance on the former class is $0.95 in Ohio and $1.19 in Washington, while on the latter class it is $0.63 in Ohio and $0.98 in Washington.

In 73 classifications, the average Bureau Rates, vary about 50% to 115% of the Wisconsin rates. Michigan is 69.5%, Minnesota 69.5%, Illinois 115%, New Jersey 69.5% and Massachusetts 50.5%. With the State Insurance rates, Ohio is about 35.4% and Washington 30% of the Wisconsin Bureau rates.

The advantages of State Insurance are shown by the fact that the widow of a man who had earned $12.00 a week would receive $2,496 in Ohio, $3.60 a week for life in New York, $2,433.60 in Wisconsin, $1,500 in New Jersey, while the proposed law in Pennsylvania would secure for her $900.

The average cost for 66 classifications per hundred dollars payroll is $1.02 in Ohio, $2.96 in New York, $3.42 in Wisconsin, and $2.22 in New Jersey.

In Wisconsin where risks on the same classifications were carried by the employer, the average in woodworking and machine shops was 21.1% of the bureau rates. The Commission states that these employers made a great saving by safety work.

The Ohio premium, therefore, is not on too low a basis, being at least 50% more than the rates above mentioned.

The analysis that I have been able to give to the laws in the various states and the working of the same, convinces me that Ohio gives more and better real Compensation, than any of the other states, at a less cost to the employers.

As this Compensation cost is carried on to the consumer, he has a right to demand that this charge shall be as small as possible. The Bureau rates under our proposed law will be about the same as in New Jersey, and Ohio will have about 50% the advantage in costs.

Mr. Walker then read several paragraphs from the Report of the Iowa Industrial Commissioner, advocating a State Fund as against Insurance Companies.

MR. CARL M. HANSEN, Workmen's Compensation Service Bureau, New York:

The last speaker was to my mind eminently unfair. Every figure quoted in his entire paper is misleading. As the author of the rating system used in practically every compensation state in the Union outside of Ohio and Washington, I desire to correct some of the misstatements made. The speaker compared the cost of insurance in New York, Ohio and Washington without any attempt to analyze the material entering into the product to which the different prices apply. Such a line of reasoning is valueless. The purchaser knows that the manufacturer of pure wool clothing could not meet the shoddy manufacturer as regards price, but when it came to wearing the two suits of clothes, the man who bought the pure wool would

usually find that he had made the better bargain even though he had paid more money for it. The same is equally true as regards insurance. To purchase insurance from a well established stock company with ample capital and surplus behind it, is better than the poor relief furnished under the Washington system or a promise-to-pay-if-there-is-anything-to-pay-with state insurance scheme. The gentleman has conscientiously refrained from discussing that phase of the subject at all. There were a few comparisons of benefits, but even these were not analyzed intelligibly.

A careful perusal of the Iowa report, comparing it with the Iowa law, will show that if the Commissioner had been as energetic and diligent in the study of the law which he is supposed to administer, as has he been in his attack upon insurance companies, most of his charges against these insurance companies would never have arisen. From some of the statements made, one is naturally forced to the conclusion that he doesn't know the law. The following is a quotation from a reply to this report: "The Commissioner assumes that an employer who has neither specifically rejected the act nor provided insurance, has by his failure actually rejected the act and is by the terms of the law subject to the penalties for rejection. The law makes no such provision. The act establishes the compensation obligation and it provides among other things that every employer in the state except as otherwise provided, shall be conclusively presumed to have elected to provide compensation. A private employer may reject the act by giving notice in a way provided by the act. Where the employer thus rejects the act he is deprived of the several defenses enumerated some of which by the way an employer never had, and the burden of proof of negligence is shifted to the employer. This provision is only a very small part of that portion of the act known as 'Part 1' and these penalties attach only to the employer who has given notice of rejection."

The report charges the insurance companies with an effort to effect the discharge of employees who are physically disabled. Such a charge is entirely without foundation and cannot be substantiated. I hold here in my hand a copy of The Universal Inspection Report and there is not one single question in that report which refers to the physical conditions of the employees in the plant. Erroneous and misleading statements run all through the report, for a specific purpose, which I believe is political rather than an effort to reach a scientific solution of the workmen's compensation question.

As regards the German system, it was my fortune to spend nearly four years in Germany. I feel that I can talk with some authority on the subject because I gave it careful study. If we want Germany's form of government, if we want to replace democracy by bureaucracy, if it is the desire of our States to kill private initiative,

and foster the paternalism and militarism of Germany, let us adopt the German system of compensation insurance, but let us not adopt it if we treasure as, Thank God, most of us do, democracy as opposed to autocracy, for it would no more fit in our Republic than would the Czar of Russia fit in the White House.

The State of Washington adopted a compensation law in 1911. Accident statistics, as quoted for that State, are not flattering to the so-called state insurance scheme. Accidents there have been on a continual increase as compared to the statistics from Michigan, where a marked decrease is in evidence. The reason is clear. In Washington, it does not pay an employer to exercise any exceptional care because he is made to pay the same rate of premium as is the employer of the same class who does not care a snap about the safety of his employees. It is an economic injustice. The reason for the decrease in accident ratio in Michigan is evident, for in that state, as in New York, Massachusetts, California, Maryland, New Jersey, and others, the free play of economic forces has been created by permitting three distinct methods of insurance giving them all a chance and making it a case of the survival of the fittest. The result has been, particularly as respects stock companies, that they have thrown all their energies and forces into the cause of prevention through the schedule rating system which was developed and is being applied solely by them at their expense and with their brains without any assistance from state funds or mutuals. The employer with the greatest hazard, pays his proper portion and vice versa. This system of rating is under the supervision of several insurance departments. In New York, the insurance department decreed that only the Universal Analytic Schedule, as developed by the Workmen's Compensation Service Bureau, could be applied, and consequently under the supervision of that insurance department, a Rating Board was established to which all, including the state fund, are subscribing. This board makes all rates affecting workmen's compensation insurance in the State of New York. The Workmen's Compensation Bureau has received little credit for this. Why not judge whether it be individuals or corporations, according to the sum total of their activities, rather than by any individual acts of the past with which they may have been charged because they, unfortunately, were part of a system which was fundamentally wrong; that is, the common law liability system. They have shown themselves more than able, however, to bring their business into line with the new conditions arising under compensation. They have the system which is scientifically correct and which is the most advanced step ever made in the solution of workmen's compensation and accident prevention, and they are willing to share it. During 1913 about 20,000 plants were inspected and $2,000,000 of premiums were

saved the employers, indicating that the system has justified itself. This means lives and limbs saved and human misery avoided. I am not making that statement to create the impression that the members of the Workmen's Compensation Service Bureau are doing this work for humanitarian reasons; they are doing it because it is good business. But as long as the desired results are achieved, does it matter what the motive is?

State insurance is peculiar. We are all socialists when it comes to socializing somebody else's business. If we are to socialize, let us commence with something that we all need: bread, shoes, clothes, coal. Why take such a complex subject as insurance and endeavor to put it on a socialistic basis. Is there any logical reason for this? None whatever, except a misunderstanding of the facts involved. I question if the speaker voices the sentiments of the average American manufacturer. To my mind the latter has never displayed any great desire to be relieved of responsibilities and I do not believe that such relieving would be good for society as a whole. The more responsibility you place on him, as respects accident prevention in particular, the more concrete results we shall have in the reduction of such accidents. That cannot be obtained, however, by relieving the manufacturer of the responsibility and placing it in the government. This would be a make-shift and entirely against social policy. If the law is built on the system outlined by the Commission in Pennsylvania, it will be fair to the employer, the employee and the public.

MR. JOHN R. O'LEARY, International Moulders' Union of North America, Worcester, Mass.:

Why have all the members of the organization known as the United Industries, which includes nearly all the large manufacturers of Buffalo, Rochester, Syracuse, Utica, and so on down State, why have they introduced what is known as physical inspection work for all employees?

Mr. HANSEN:

Some criticisms were directed against the Universal Analytic Schedule because no attention had been paid to that phase and I may state that I was fundamentally opposed to injecting any reference to it in the Schedule for fear that we should be charged with discrimination between employees. I am not inherently opposed to medical inspection if it is done under proper conditions, but I believe it is a matter that should be handled with extreme care and I do not see how the insurance interests can consistently take any steps in the matter. I am afraid that the principle might

be misused. If a system of compulsory examination of all employees were inaugurated, it might work to keep all defectives out of employment. If it can be evolved on a plan whereby such defectives, when discovered under medical examinations, can be placed in some occupation suitable for them, it may be all right, but I do not believe it has reached that stage yet and I should not look with favor upon compulsory medical inspection unless the exact scope of it was clearly defined and the results to the defective employees made apparent.

MR. O'LEARY:

Since the introduction of the workmen's compensation, our older members are having difficulty in securing employment. Complaints have come from various parts of the country. We have always favored workmen's compensation and favor it today, but the fact remains that the discrimination is there and we can prove it.

The CHAIRMAN:

Is Mr. Steve McDonald, President of the Central Labor Union, Scranton, Pa., here? He is to be the next speaker on this subject according to the program. (No response.)

MR. WALKER:

I was advocating a plan, that will, as I see it, reduce the cost of compensation insurance to the minimum, giving to the employee the greatest amount of compensation possible, while Mr. Hansen presents a plan to secure profit for an insurance company. That is the difference between the two viewpoints.

MR. FRANIS FEEHAN, Member Pennsylvania Industrial Accidents Commission:

It is a question whether or not the Commission has considered that the passage of a law similar to the one prepared by it might add to the discrimination against the workers that already prevails. We know that when the compensation law went into effect in Great Britain and Germany the employers did discriminate against older men, in retaliation for having the law made against their wishes. We also know that men were examined as to their physical fitness for employment. We find that, growing out of that practice, those countries have enacted an old age pension law and a non-employment law whereby the public are required to pay men who are out of

employment. This legislation is going to follow your compensation law. The compensation law will not add anything to the discrimination in our state. Men are discriminated against in seeking employment, not on account of their physical condition, as often as on account of political opinions, membership in trade organizations, religious beliefs or nationality. I would not submit to physical examination to obtain employment under ordinary conditions, but we all, even labor men, must admit that there are certain kinds of employment for which men should be required to pass a very exacting physical examination, where the life and safety of large numbers of other men are involved. We cannot condemn the system of physical examination; but I do not believe that employers will go to that expense because the compensation law is imposed upon them. Physical examinations that I approve of are made in many of our industries. I know that the employers in general in this State want a compensation law. They are working as hard for it as many of the laboring men. Some are now paying as large a compensation to their injured as this law will exact.

It is unfair to say that employers in general will do this or to say that the law will work a hardship. This would be a question for discussion if the amendment to the constitution passes, permitting the passage of a compulsory compensation law.

The CHAIRMAN:

Yesterday a part of the program was omitted and the announcement was made that we would take that up this afternoon. The subject is "Proposed Regulations for Bake Shops."

MR. CHRIST KERKER, International Union of Bakery and Confectionery Workers, Yonkers, New York:

Your attention was drawn last year to the fact of the cellar bakeries existing in Pennsylvania and the unsanitary conditions that exist in the baking industry. Your Industrial Board has taken up the case and has made recommendations which will probably come before your Legislature. Some of the employers oppose the suggestions for improvements. The Industrial Board has done its best under the circumstances. It consulted the most practical men in the trade and investigated conditions existing in New York as a result of the new law.

I want to take up two matters that the bakery workers think are most urgent; one is that we do not want to eliminate the bakeries that exist at present, but when bake shops are built in the future, they should be built above the surface. Wherever fresh air and

sunshine cannot reach is not the place for human beings. We have investigated conditions in the State of New York and have finally reached the conclusion that they eliminated cellar bakeries not only for the sake of the worker but also for the best interests of the employer. Cellar bakeries are unhealthy and sometimes the men who work in them are diseased. A diseased man makes bread for the public. It is natural that this bread is anything but sanitary and clean. This disease is liable to be carried directly to your home.

In New York, since the change has been made, the employers who had bitterly opposed the proposed laws are glad now that they are enacted. They have a better class of men to do the work; they are getting work out of them; and the men are more healthy. The bakery workers must also undergo a physical examination in order to obtain work in the bakeries.

The International Union has advocated the policy of cleanliness since 1886 and we are today in a position to say we have not put the employer out of business; but on the other hand we have increased the sale of bread by bringing about clean conditions. We do not want to put employers out of business, but as in Illinois, to give them two years to get out of the cellars and build shops above the earth. According to the statistics of the state bakery organization there are just forty shops left in the cellars in Illinois. It is possible by giving time, to get rid of cellar bakeries in Pennsylvania. The same conditions were met in New York and New Jersey and the celler bakery there has been eliminated.

MR. B. ABELSON, Organizer, Joint Executive Board, Bakery and Confectionery Workers' International Union, Pittsburgh:

We are here, representing the bakers, with the hope that we shall get better loaves in the future, because the shops will be better to work in. We need plenty of windows, skylights and ventilating fans. This would mean a great deal for the health of the bakers; to have light and air, and to get rid of the flour dust.

We cannot blame the inspectors for poor conditions, when one inspector has 700 shops to visit. When there are more inspectors, the bakeries will be cleaner.

I shall give up my place, now, to another baker from Pittsburgh Local No. 44, who will explain the situation to you.

MR. PHILLIP KNOPF, Bakers' Union, Local No. 44, Pittsburgh:

At the first conference that was called by the Industrial Board last year, in October, I was one to be present here as delegate from my organization, Local No. 44, of Pittsburgh, of the International

Union. Then I had the pleasure of having the floor and giving some suggestions. The Industrial Board certainly did pay attention to my suggestions; and I can say, in congratulating them for their work, they have done wonderfully well for the last year in improving some of the bake shops.

Now, I come from Russia. I can remember when I left my old country in 1897, there was a law that a bakeshop should not be any more in a cellar; it must be above ground or at least the windows must be above the ground. The employer has to have two suits of clothes for each workman in his shop; one suit is supposed to be hung on the wall and one he wears. As soon as this gets dirty, he is supposed to hang the dirty suit on the wall and put the clean one on. Of course, I suppose that they have more inspectors there than we have in Pennsylvania. Now that is the condition in Russia and still the baking industry is bad.

Now, when I arrived in New York in 1897, a boy of 17, I was looking for about three or four weeks to secure some work. I secured a job but not the kind of a job I wanted. In Russia I was working not more than from ten to eleven hours, but in the United States I secured a job where I worked in a bakery from fourteen to sixteen and eighteen hours, and when I was through there with my work I had to push up a push-cart with bread to the customer and deliver the bread. Now I was not suited to this job. So I left New York and got into Pittsburgh and I did find a little better shops than in New York, it is true.

Now since those years, I can remember that organized labor has done a whole lot of good to the baking industry. Organized labor abolished things that no law was needed to abolish. We abolished a great many bad things. But we cannot abolish a cellar bakery.

Now a lot is said about the height of bake shops. The general organizer from the International has told you that there are a great many bake shops only six feet high. We need higher shops. You get the committee into any bake shop, large or small, and measure the height of the machines, measure the height of the steps which the men must stand on to operate the machine, then you will get an idea about just exactly the height of the bake shop. That was my suggestion and I have nothing else to say on this subject. Who can know better than the one who measures a place just exactly what is required.

Now about the inspectors. They have done their best. I know they have gone out and forced some of the bake shops to close up. But they had to let them open again, after the owners had put them in a sanitary condition, even though they too were in cellars. There is no law to forbid these things yet. Now I hope

that this Industrial Board will pay especial attention to the baking industry so that conditions will soon be much improved.

I am glad I had this chance to tell you about the bakeries. I have also been instructed to thank the Industrial Board for the work they have done the last year.

The CHAIRMAN:

Is there anyone who has anything more to say? If not, I wish to thank you all for your loyalty in staying here so long, and close this session with thanks to you. The session now stands adjourned.

Whereupon, at 5:45 P. M. the session adjourned.

CURRENT AMERICAN FIRE WASTE.

POWELL EVANS, Chairman, Fire Waste Committee, Chamber of Commerce of United States of America and Chairman, Philadelphia Fire Prevention Commission.

The Fire Waste is continuing throughout the United States at a rate approximating the average of recent years, after including the late Salem conflagration. For the past three years the figures are as follows:

1914, ...	$177,000,000.00
1913, ...	178,000,000.00
1912, ...	178,000,000.00

The pity is that the destruction in life and property is not decreasing. It seems exceedingly difficult to bring home to the average citizen, individually or grouped in various activities, the true perspective of this problem—which could so easily be corrected and which is costing the nation and every individual in it so tremendously—amounting, all told, in round figures to one million dollars per day.

The following axioms should be taken to heart:

1. Each fire is always a local happening, in some definite property, at some definite place. It is a strictly local thing in its inception, and (excluding forest fires) cannot physically extend beyond any one urban community.

2. The sum of Fire Waste is a strictly national problem and its influence cannot be localized, because the Insurance Indemnity which pays for it is a nation-wide average, which can be only minutely modified by the averages of any one community, no matter how good.

3. (a) The average citizen builds without due regard for fire hazard, buys insurance and forgets about this danger, leaving it in the hands of the Insurance Companies.

(b) The average local community (city, town, etc.) contents itself with a certain amount of public protection, such as water mains, fire houses, etc.; but fails to devise and enforce adequate building laws (covering the physical construction, protection and equipment of property), and occupancy and housekeeping laws (to assure that the actual daily living in property is conducted in a safe, cleanly and orderly manner).

(c) The average state, while now taking greater interest in this problem through the adoption and enforcement of Fire Marshal laws, does not duly control the danger by the enforcement of building and housekeeping laws applied all over the state to at least a certain minimum level of requirement.

(d) The Federal Government cannot in any way directly participate in regulation of this waste except through the regulation of Insurance itself—which the Supreme Court has so far denied—but it could make an adequate study of the subject and help to educate and inspire all its people about learning the true social and economic facts and efficiently acting upon them.

The bulk of Fire Waste throughout the country occurs in our cities. How can this condition be practically bettered with adequate speed? The bulk of Insurance on such properties makes no demand on the owner to better the property, but merely investigates it and charges sufficiently high rates to average at least twice the fire loss on such properties in the aggregate. Hence the Insurance Companies, agent and brokers in the aggregate cannot be relied upon as an active and militant influence to depress the value of their own wares. Fire insurance is one of the few things that sells itself, due to the economic necessities of the case. The cost of competition in this business arises from the effort to secure the largest share of the choicest part of the business going—not necessarily to enlarge the bulk of the business itself. When the property owner has bought his policy, he looks upon that end of his business troubles as finished, and forgets the fire hazard until a fire occurs; when his interest appears to be to collect his policy and begin again. This is the real situation with respect to the bulk of city property. It is therefore incumbent upon the city governments in the aggregate to im-

pose minimum requirements on the construction, protection, equipment, occupancy, and management of property to assure that in these respects it is reasonably safe for life and property from fire. As a matter of fact the bulk of American cities have not yet been induced to act intelligently and comprehensively along this line. It therefore becomes the duty of the state to impose upon its respective cities in turn, a minimum requirement in this respect through state legislation, properly enforced.

The Philadelphia National Fire Prevention Convention, October, 1913, brought together the very best and most complete expert opinion on all these points ever heretofore gathered on this subject, and the legislation and practices advocated at that time could constitute the basis of the best reform in this matter.

(Copies of the above "Record" are attached to this report.)

It is hopeless to look for correction of the fire hazard evil by controlling only new construction all over the country; it is necessary to safeguard and improve the tremendous bulk of existing property. How can this be done practically? First of all, our citizens and legislators should realize that reasonable correction of known existing abuses, even if costing money, is not confiscatory. Existing city properties on the average should be improved with respect to fire danger. That is the short cut to bettering conditions at once—reasonably to improve existing property.

In the 1914 Report of the Fire Waste Committee of the Chamber of Commerce of the U. S. of A., the facts were cited in detail with respect to a recent court requirement imposed on Insurance Companies in the State of Pennsylvania, whereby every rating of a property within the State, made in detail by these Companies as a basis for a Fire Insurance rate, must be advised direct to the owner in the same detail, noting the defects of the structure and the reduction in the rate for improvement of the property by eliminating or modifying these defects. If every State in the Union would first of all adopt a uniform survey and rating blank, which they would impose upon the Insurance Companies for the same reasons that uniform negotiable instruments and bills of lading are now required, then there would be a uniform basis for collecting the fire-hazard data on individual properties so that the citizen would become familiar with and understand the facts. If then the several states would enact a law paralleling the present Pennsylvania Court ruling on the subject requiring the Insurance Companies in the aggregate to inform citizens in the aggregate of these details of property deficiencies and the allowance for correcting the same, the individual would get home to the facts in the case, all over the country, and know how to correct them; and the Insurance Companies should be required by law to give adequate credits for all such improvements.

If, finally, the local communities (cities, towns, etc.) all over the country, would adopt ordinances and regulations requiring citizens to do a minimum of all this improvement—say spend a dollar at any time which can be recovered, by reduction in rate, within five years, or make a 20% investment—by improving the building construction, protection and equipment of existing properties, there would be a prompt betterment physically, of property all over the country in these congested centers, to fight the common physical danger of fire destruction. If in addition to this physical improvement, the police power all over the city and State would adopt a uniform practice of inspection of property, periodically and continuously through the active fire fighting force, or equivalent, to see that cleanliness and order were constantly followed in living in properties throughout the country, this great Fire Waste from disorder and dirty living, which has accounted for about half of this loss in life and property throughout the country for years, could further be eliminated.

Emphasis should be placed upon the facts that:

The nature of this fire-waste problem,
The influences surrounding this problem, and
The practical methods to correct the evil,

are all 90% known and understood, and merely need concerted action by all parties having influence in the matter, to promptly eradicate a large proportion of existing American Fire Waste of life and property, which carries with it a proportionate reduction in the interruption of business, loss of health, etc.

The individual can do good service in both his own interest and that of his community in this matter, by first caring for the fire hazard of his own property and then helping in any general local movement to care for this community hazard. Adequate care for both of these involve the following six cardinal considerations:

(1) Exposure Hazard: This danger from surrounding property is a heavy charge in every average city Insurance survey and rate, amounting often to one-third of the whole charge. Each citizen should study his location and his exposure hazard thereon and the reasonable means of bettering his own property (such as fireproofing doors and windows and outside walls, extending fire walls above the roof, non-combustible roofs, etc.,) so as to minimize this physical exposure, hazard and consequent Insurance rate.

(2) Construction: A large part of the Insurance survey and rate is always based on deficiencies in physical construction of a property. This should be studied (unprotected vertical and horizontal openings, too large areas undivided by fire walls, concealed spaces, etc.) and knowledge gained as to how they may reasonably be remedied, and how such improvements will reduce the Insurance rate.

(3) Protection: The best located and constructed property in the world, without adequate fire alarm and extinguishing facilities on the average ultimately suffers undue fire waste, either in buildings or contents or both. A cast iron stove won't burn, but it is burning up contents constantly. The deficiencies of a property in this respect should be studied as items in the Insurance survey and rate, and bettered (by installing metal waste and ash cans, fire buckets, chemical extinguisher, automatic sprinkler or stand pipe, etc.) and the investment may be found highly profitable in the reduced hazard and rate.

(4) Equipment: Virtually all property must be heated, lighted and ventilated these days, and all this equipment, in addition to special apparatus required by almost every business, has fire hazard. The citizen should study the character of his equipment before purchasing, and better that which he now has—all of which should reflect reduction in his insurance rate.

(5) Occupancy: Every business has inherent in it certain dangerous fire hazard characteristics. Each individual should study the nature of his business and properly care for and isolate materials or processes which may unduly occasion or accelerate fires. Such action properly taken, should certainly reflect itself in a reduced insurance rate.

(6) Management: It is of the utmost importance that a property should be kept clean. Half of all American Fire Waste comes from careless accumulation of dirt and rubbish and disorder. The people occupying a building should be taught cleanliness and order, and should be organized to detect and extinguish fire, and how to call the public fire department quickly when necessity requires.

Each citizen can apply in his factory, warehouse or home, the above correctives, which constitute the essentials of Fire Prevention; and can also join in neighborhood movements (such as the National Fire Protection Association of Boston, or its local municipal chapters scattered about the country) to carry out the above program, and to study and get prepared and enforced, reasonable legal regulations whereby these correctives may be demanded in the law; and can back up public officials charged with enforcing such law. Lower Fire Waste, reduced insurance cost; and less loss in life, health and interruption of business—are all early possibilities from such work.

STATE LEGISLATION NEEDED.

1. State Building Code: This is certainly the most important regulation necessary all over the country, which is now utterly out of date and inefficient on the average. The exposure hazard, construction, protection, equipment and occupancy problems should all

be cared for in such code,—which should automatically apply throughout every state to a certain level of efficiency—as thoroughly discussed by the bulk of experts in the country at the 1913 National Fire Prevention Convention.

2. Protection: A measure of fire protection should be required by State Legislation throughout every state to assist in:

(a) The control of fire in buildings, no matter how well constructed, and

(b) To assure a minimum efficiency in public fire departments.

As to private fire protection (Item "a"), it is recognized in insurance circles that the automatic sprinkler system is an essential for low priced insurance, based on its proven record for a generation past. On no unsprinkled building on the average is there a rate of less than 50 cents per hundred dollars, whereas the addition of an automatic sprinkler system and its attached water supplies reduces this rate on the average to 10 cents per hundred dollars. This Sprinkler System is actually the detailed extension of the water supplies to the area of all property subject to fire, prompt and automatic in its action at the point and moment of fire occurrence.

Many cities, notably New York and Chicago, now demand this apparatus in a wide range of buildings. Several states are proposing to take a like action. Such a state requirement is important, and desirable everywhere if the interest of the public is safeguarded in three particulars, viz:—

That the Insurance standard for this protection shall be made reasonable, so that the cost of installation shall not be unduly burdensome to the buying public,

That Insurance rates should be reduced proportionately to the protection provided, and

That water supplies for such building protection, whether under public or private control, should be made reasonably accessible and low in charge through regulation of a Public Service Commission or some other power of state in existence or of new creation.

As to Item "b," a minimum efficiency should be required through state legislation, for public water supply and Fire Department efficiency in every sub-division of the state.

3. State Fire Marshal Law: A third line of state action of great importance is the State Fire Marshal Office. This official might with great advantage act not only to detect and suppress arson and to educate the public, but also at least to a minimum extent, make continual occupancy and housekeeping inspections over all created property through the state, possibly with the assistance of active firemen, as Wisconsin is doing, to assure cleanly and orderly living in property and a reasonable fire-hazard improvement.

4. Storage and Shipment of Explosives: Explosives of all kinds and in all amounts should be controlled in their storage and shipment, by law which is most readily and uniformly applicable by the state.

5. Uniform and Public Insurance Survey and Rating Schedules: These are essential to educate the public in detail about fire prevention and protection details, and should be required by State law.

American Fire Waste is enormous, and continues day by day, all the time. It rests with a number of factors to control and diminish it, but among these, easily first is the adoption and enforcement of sound state legislation to cover all the complicated necessities of the case.

FIRE ALARM SYSTEMS.

MILES S. HUMPHYS, President, Firemen's Association of Pennsylvania.

If responding to a request to submit a paper on the topic "Fire Alarm Systems" contemplates a rehearsal of the character and efficiency of the varied systems, represented and ready to be installed by numerous concerns throughout the country, the task would not only be too great, but would also perhaps lead, without practical experiment, to an endless discussion as to which in point of efficiency were the best; hence, I propose briefly to confine myself to an effort to point out, based upon a somewhat extended experience in fire departments, what in my judgment are the leading characteristics of an efficient Fire Alarm System, regardless of the ability of any company or concern that claims that it can furnish and install such a system.

Since the inception of the idea by Dr. Chemiz, of Boston, many years ago, that the Electric Telegraph could be used as a method to send forth alarms of fire, numerous changes, additions and improvements have been made, with the co-operative services of Moses Farmer, of that City, and the subsequent entrance into the business of John N. Gamewell. Nevertheless, the fundamental principles of the primary installation still remain intact. What development then should the public through their municipalities most consistently

rely upon? Surely that system or systems that guarantee the most definite and positive information as they send forth the call or notice that the demon fire is at work, for, to stay its devastating progress it must at once be met and subdued, are the best.

The system once installed, its auxiliary, the "Fire Alarm Box" must, or should be, in its mechanical construction, of the highest best, and surest order.

Thus equipped, the system from street box to apparatus house is as nearly perfect as anything made by human hands could possibly be, for it is instantaneous, accurate and durable.

Systems thus inaugurated, as a rule are fully adequate to meet all reasonable requirements of their respective communities in the extension and placing of additional boxes, and by thus facilitating the operation of Fire Companies, afford increased protection to the inhabitants.

Owing to a number of recent sad fatalities that occurred to children in the burning of school buildings, the safeguarding of their lives is a subject that appeals to our innermost sympathy and calls for the most comprehensive and rigid protection. I shall conclude this brief paper with a statement of how, in my opinion, school buildings should be equipped, with a view of affording the quickest and most efficient protection.

The first requirement for a proper school house fire alarm system, is an efficient local alarm which can be heard in every room, corridor or part of a building, so that occupants may promptly be notified to leave before the danger becomes acute.

The alarm should be so thoroughly distinctive as to be immediately recognized among all other signals which are used in the schools.

It should preferably be made by the same instruments that are used for other signaling, in order to get the benefit of continual tests by such operations.

It is essential that it be absolutely reliable and positive under all conditions, or during times of excitement, as from a fire, and the human equation should therefore enter into it as little as possible. It should be thoroughly automatic when once started, and require for its operation but the simplest intelligent act.

The devices which are to give the signal, in order to be kept reliable, should at all times be well protected from mechanical or other injury and so arranged that they will not be apt to be tampered with, either maliciously or mischeivously, neither must they be indiscriminately operated to cause indifference in responding to them.

Provision should also be made whereby drill exercises could be had in connection with them so that the scholars may be familiar with their duties in case of emergency. These drills should be of

such a nature that even though the usual exit is blocked, the scholars would instinctively go to others.

It would be preferable to have the alarm give some general information in regard to which part of the building the fire was, and yet information of such a simple nature that it would never be confusing.

A second most important result to obtain is to give an alarm to the fire department that they may promptly respond in saving life and property.

The same manual operation that gives the local alarm to the children should cause this signal to the fire department, and without further attention on the part of the inmates of the building, whose whole attention could then be devoted to first clearing the building of scholars.

One of the most efficient methods to bring all these results about is to have a suitable number of stations electrically connected throughout the school building and preferably arranged in the most accessible locations, such as in the hall ways and on every floor as well as the basement.

These stations can operate suitable alarm bells throughout the building, arranged in such a way that no matter what exercises are being carried on, such as singing, etc., that said exercises would not prevent the alarm being distinctly heard.

The number of stations and the number of bells throughout the building would, of course, depend upon the construction and size of the building and the location of the rooms and hallways.

It would be preferable in most cases to have bells within the buildings where their sound would not be interfered with by storms or other outside disturbances.

The electrical circuits which connect these instruments and the instruments themselves, should preferably be so arranged that immediate notice would be given in case they became defective. This is accomplished by use of what is called "closed circuits" which immediately cause the bell to strike a blow in case they were accidentally broken or any accident had happened to the battery which furnished the electricity for their operation.

Testing instruments of a suitable nature should also be provided to show the conditions of the battery and circuits on the various instruments at all times and for inspection purposes.

The simplest means to cause a signal is the pressing of a button or the pulling down of a handle, hook or ring, as universally adopted throughout the country, at the present time, for fire signaling from street stations.

To prevent malicious or mischievous operation, of this button or pull, it can be enclosed in a case having a glass panel in front, which may be readily broken to give access to the pull or button. This

breaking of glass makes a peculiar penetrating sound and has proved, from past experience, to be an efficient remedy against malicious or mischievous tampering with such devices.

This glass can be broken readily in several ways, as by a small hammer hanging on a chain, or by a handle mounted on the case, or by any article that might be carried on the person such as a bunch of keys, or a knife, and all have been used for this purpose.

In order to prevent danger of cutting hands or fingers from broken glass, means should be provided so that the broken glass can never be left in proximity to the press button or pull.

The principles embodied in the Gamewell Auxiliary Fire Alarm System are especially adapted for this use and have proved very efficient for giving alarms of fire to the fire departments from the sub-stations.

For schoolhouse use, such sub-stations are provided with a local signaling mechanism, and have the pull, or handle operate a local alarm of fire throughout the building at the same time that the fire alarm signal is sent to the fire department. This local alarm will consist of some definite signal, such as 44, never used for any other purpose and should be repeated four times.

In order to distinguish whether the alarm was from the basement or the first, second, or third floors, the station in the basement can be made to strike 44, to be repeated four times, the station on the first floor could strike 44 followed, after a slight pause, by one blow, the 44 meaning fire and the one meaning first floor, and would be repeated four times. The station on the second floor would strike 44, followed, after a short pause, by two blows, to be repeated thereafter as before, which would mean second floor, and the third floor could be indicated by three blows in a similar manner.

A system of this kind is simple, not apt to lead to confusion and gives a general idea of the whole situation of special value, for it is evident that if the fire was on the third floor, there would probably be no serious trouble in getting out of any of the doors on the lower floors; whereas, if the signal came from the basement or the first floor, it would be a warning to have pupils go instantly to other exits in case they found one of them blocked, although of course, this really would apply without regard to which floor the alarm originally came from, but it would simply be an extra warning or precaution.

A combination sub-signal-station of this kind consists of a neat round iron case, having a door on the front mounted on brass hinges and furnished with a brass lock. On the face of this door is a panel of glass held in a frame. This frame is hinged at the bottom and has a spring tending to throw it open. A brass clip on the inside of the door engages the glass panel and prevents the frame

from swinging open. The breaking of the glass immediately releases the frame which will swing open, carrying the broken pieces of glass which then fall to the floor. When this frame is open, the operating handle, mounted on the door, is accessible to be pulled down without any danger of cutting the fingers with broken glass.

Pulling down this handle operates a switch connected electrically to the fire department signal box, and starts said box to give its alarm of fire to the fire department and it will also send a return signal to the sub-station, notifying the operator that the street box has been started.

The pulling down of the handle at this sub-station also simultaneously releases a local signal mechanism to give the local alarm throughout the building as described. This local signal mechanism is thoroughly well made and operates through multiple contacts so as to be sure and give positive and correct operation to its circuit.

The local mechanism and auxiliary switch are mounted on a piece of slate inside of the case. The auxiliary switch is on the front but the signaling mechanism is on the back of said slate, where it will not be exposed to dust or dirt whether the outside door is open or shut.

A press button accessible when the outer door is unlocked and open is arranged so that the local alarm can be given without operating the auxiliary switch, to thus enable scholars to be properly drilled without sending an alarm of fire to the fire department.

When this local signal mechanism has been operated, the door cannot be again shut until said mechanism has been properly wound and as the operating handle of the switch is carried on the door and disconnected, the auxiliary switch cannot be operated by it while said door is open and thus mistakes will not be apt to be made of giving an alarm to the fire department on the fire drills.

Dr. **John C. Price, Late Chief Medical** Inspector,
Department of Labor and Industry.

Vol. 2 No. 11

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

NOVEMBER, 1915

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1915.

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P. Woods, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below and also by: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Feehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.,

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of S. S. Riddle, Editor.

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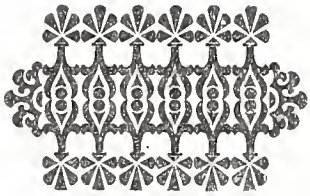


DR. JOHN C. PRICE.

It is with deep regret that the Department of Labor and Industry announces the death of Dr. John C. Price. Dr. Price was an honored official and a beloved friend, not only of the members of the Department, but of all who knew him.

His illness had been of many months' duration, but it was only during the last summer that he was unable to attend to his duties as Chief Medical Inspector of the Department. For a long time previous to this, he had been in poor health but his constant good humor and cheerful manner made it seem impossible that he could be in any other than fine physical condition. He was always entirely unselfish in the performance of his duties and it is more than likely that his condition was more critical than he himself knew, since he was so entirely self-forgetful in the keen interest he felt in his share of furthering the success of the Department.

Dr. Price was born in the West, in Donaton, Kansas. While he was still very young, his father was killed, leaving his mother with three small children and scarcely any money. She then went to Philadelphia and entered the Woman's Medical College. In an incredibly short period of years she was graduated and established a good practice in the city of Chester. Dr. Price went from the Public Schools and the Pennsylvania State College to the University of Pennsylvania where he took the degree of Doctor of Medicine in 1893. After this, he went to Johns Hopkins for a post-graduate course, and then to Berlin.

After studying in Germany for one year, he located in Scranton as a specialist in electro-therapeutics and the X-Ray. In addition to having a large private practice, he was connected with the International Correspondence Schools in the dual capacity of medical and hygienic superintendent of the large force of employees and director of educational work along those lines.

In 1913, Dr. Price was appointed Chief Medical Inspector of the Department of Labor and Industry upon the recommendation of many prominent doctors and laymen in Northeastern Pennsylvania. In this position his service was invaluable. He was in charge of the Division of Industrial Hygiene, and of all matters pertaining to the hygienic conditions of our industries. Under his supervision many important and extended investigations were made of the health of employees and sanitary conditions in a number of the largest industries of the State. Through his efforts many improvements were made in the general conditions of many plants.

In the midst of his work, last summer, he became suddenly too ill to continue at his office, and after several months of sickness finally died at his home in Camp Hill, on October the thirteenth. His age was forty-four years.

While Dr. Price's official services to the Department will be greatly missed and his place hard to fill, the services he rendered in a personal way by encouraging the other workers and smoothing over the rough places for them, will be almost impossible to replace. The members of the Department, who remain to continue their duties, hold in sacred memory their much loved fellow-worker, and are constantly inspired by his brave and cheerful example.

THE SAFETY IDEA AS RELATED TO CREDIT GRANTING.*

CHARLES E. MEEK,
of the American Exchange National Bank, New York; President of National Fire Protection Association, and Past President of National Association of Credit Men.

Definite results are always welcome to those seriously interested in the work of an organization like the National Safety Council.

Your records are doubtless filled with a mass of evidence of such a convincing nature that the doubting Thomases, of which there is always a plentiful crop, are in danger of being persuaded that there really is something of value in co-operative action.

My eyes were opened as to what the safety movement really means when a few days ago I visited a large manufacturing plant and in the course of conversation with the company's financial manager was told that about eighteen months ago the company added to its staff of experts a safety engineer, and that the result was highly satisfactory, for at the end of the fiscal year it was found that less than one hundred dollars had been paid out to injured employees. I was told that every inch of this vast plant, where thousands of men are employed, had been treated to a full dose of safety methods. This treatment not only produced actual results in reducing the chances of accidents to the minimum, but it eased the minds of the managers, giving them more opportunity for the development of their regular work. The safety expert of this company is consulted regarding every proposed change in the plant and its machinery, and nothing is left undone for the protection of life and limb.

*Address delivered during the third annual meeting of the National Safety Council held in Philadelphia, October 19 to 21, 1915.

There is an important consideration which should not be lost sight of, namely, the effect of safety methods on the expense account. The highly successful manufacturer is the one who is able to keep down the cost of production; protection against accidents will help to accomplish this.

It is impossible to find a single argument why the introduction of the safety principle into any business is not a good investment. In fact, there is everything in its favor. At the same time, you are doubtless experiencing the same uphill fight in the development of your work that other organizations have experienced. This should not be a cause for discouragement, but rather should be an incentive. There is more satisfaction in winning a hotly contested fight than in having an easy walk-over.

For twenty years the National Association of Credit Men has been engaged in educating our business men in the application of safety principles to the granting of credit. It has endeavored to impress upon its members that the giving of credit should be based upon substantial facts, and that the "take a chance" idea is gambling, pure and simple. The credit man of today keeps in close touch with the business of his customers. He watches every development and does not hesitate to criticise the weak points, or commend the strong points, in the policies of those with whom he deals.

A highly important factor in credit work, and one strongly emphasized of late years, is that of fire insurance and fire protection. It is on this common ground that the National Association of Credit Men and the National Fire Protection Association meet. The Credit Men discovered that a great many of their customers either neglected to protect themselves against loss through fire or handled their insurance so indifferently that it often times was of no value. A vigorous campaign was started, in which printed matter and speakers were used to show the necessity for full insurance placed with responsible companies, and every one was urged to know thoroughly and live up to the requirements of the insurance contract. No opportunity was lost to impress upon every one that a credit unprotected against danger of loss through fire belonged to the "take a chance" class and should not be tolerated. Questions regarding insurance were introduced into financial statement forms, and the mercantile agencies aided the movement through special work. Today, the relation of fire insurance and fire protection to credits is on this basis: Insurance reinforced with fire prevention methods stands first; insurance, alone, ranks next; the use of fire prevention methods without insurance is third; and the absence of both insurance and fire prevention methods removes every excuse for the extension of credit. Fire prevention methods not only reduce the hazard, but also

the cost of the insurance. In some instances the latter is probably the only incentive to their use, but in many cases a broader view prevails and consideration is given to protecting life and removing as far as possible the unpleasant experience of having a life's work destroyed.

While great progress has been made by the National Association of Credit Men in this direction, the work is by no means finished. It has, however, reached a point where it is handled with less difficulty. In view of this, why not seize the opportunity to advance another step by encouraging the employment of safety methods, or, in other words, place a premium upon their adoption, in the same manner as outlined in the reference to fire protection? By adding to the financial statement form a single question, the attention of thousands of business men will be attracted, many of whom will realize the value of the safety movement. There are some who might consider inquiry into this subject as impertinence, but there is every justification for it, for the reason that bankruptcy has frequently followed accidents where loss of life or serious injuries have occurred; and it is the duty of every credit man to use his influence toward the elimination of every cause of bankruptcy. An employee who has met with a preventable accident is no longer an asset, but belongs in the liability column, and it is the overloading of this side of the ledger which results sooner or later in failure. In my work I have visited manufacturing plants of every description and invariably have carried away an impression as to the business ability of those responsible for their management. The clean light workshop, where every precaution against fire and accident is taken, is evidence of good management, and under such conditions the product is bound to be superior, all of which tends to influence a higher credit standing.

Employers are doubtless often discouraged by the lack of appreciation on the part of their employees, who fail to use the means provided for the safety of their lives and limbs. The other day I stood in front of a large plant, the entrance to which was crossed by several railroad tracks. A subway had been provided, at each end of which stood a prominent sign, reading, "Don't Cross the Tracks—Use the Subway." As it was close to the noon hour, I waited to see how many would follow the sign and was not suprised to see it entirely disregarded, for not a single person used the subway. A splendid exposition of our "Jay-walking" habit.

It is estimated that 35,000 workers were killed and 2,000,000 injured during 1914.

During the same year $236,000,000 worth of property was destroyed by fire.

In the same period 18,000 business failures occurred, with liabilities of $358,000,000.

This tremendous waste is being fought by your organization together with the National Fire Prevention Association and the National Association of Credit Men. How closely related is the work of these organizations! for in the last analysis it is the conservation of life, property and credit that they are all standing for. It is an uphill fight, full of discouragement; and when one considers that in spite of the vigorous campaign carried on for years against fire we keep on burning up about the same amount annually, isn't it a strong indictment against the intelligence of the American people?

I assume that your work is not limited entirely to your members and those eligible for membership, but that you are spreading the doctrine of safety broadcast throughout the country. The extent to which work of this character can be carried on depends, of course, upon the funds available for such a purpose. The two organizations I represent have to an extent solved this question. They have developed from their membership men who can intelligently and interestingly discuss questions pertinent to their policies. These men have invaded the public platform, the meetings of trade organizations of every character, and the school house. And the last-named is an effective working place, for if we get the youngster thinking the right way, we are saved the hard job, later on, of converting a grown-up. There is little expense connected with this; it means more, a sacrifice of time. The development of classes for the study of the theory of credit and the present methods applied to the management of a credit department, has far exceeded the brightest hopes of those responsible for their introduction. Men are today being shaped up for business better than ever before—a profitable investment in the long run.

A great national safety movement is on the way. It embodies the same principles the organizations I have named stand for—the protection of the lives, property and credit of the people of the United States. The great problem of this movement is of a financial nature. Just think of it, the American people will burn up during the next few years property the equivalent of which would build all the battleships and fortifications needed.

In closing, I present to you the greetings and good wishes of the organizations I represent, and pledge to you their cordial co-operation. As time goes on may these three great business organizations become more closely bound together, for we are engaged in a righteous cause and are building for the future prosperity of America and its people.

ACCIDENTS IN PENNSYLVANIA INDUSTRIES DURING OCTOBER.

Accidents in Pennsylvania Industries during October resulted in injury to 5,162 employees, according to reports made to the Bureau of Statistics and Information of the Department of Labor and Industry. Ninety-three workers died from their injuries.

The total of industrial accidents for October is lower than the monthly record for either August or September of 1915. In September the record of 5,693 industrial workers, killed and injured, is the highest for any month during the year.

The marked reduction of almost ten per cent. in the total number of injuries during the month of October under September's record is generally regarded as due to increasingly smoother working conditions in plants rushed with war orders.

Of the total number of workers injured during October, 475 were disabled for more than thirty days, and 4,584 were disabled for periods of less than thirty days. Wednesday continues to be the day of the week when most accidents occur.

The record of October accidents by days is as follows:—Wednesday, 929; Tuesday, 874; Friday, 872; Thursday, 861; Monday, 835; Saturday, 583; Sunday, 208.

During the first ten months of this year 43,890 workers were injured in Pennsylvania industries according to reports made to the Bureau of Statistics and Information. Of that number 837 died from their injuries, and 3,227 were disabled for more than thirty days.

The detailed report of all accidents reported during the month of October is given on the opposite page.

REPORT OF ACCIDENTS DURING OCTOBER.

Industry.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Male.			Female.			Total.	Total for month.
								Fatal.	Serious.	Minor.	Fatal.	Serious.	Minor.		
Nursery,	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....	.....
Engineering,	....	....	....	....	....	....	....	....	....	.....	....	....	...	.....	.....
Building Trades,	1	4	6	2	7	2	2	....	3	21	....	....	....	24	.....
Chemicals,	4	16	18	12	12	14	12	3	4	81	....	....	....	88	.....
Clay—Glass,	10	10	12	10	8	12	7	2	3	64	....	....	....	69	.....
Clothing,	....	2	....	1	....	....	....	....	....	3	....	....	....	3	.....
Food,	2	3	3	2	....	6	8	1	....	23	....	....	....	24	.....
Leather,	1	4	9	6	3	2	1	....	....	26	....	....	....	26	.....
Liquors,	....	....	1	....	1	....	....	....	....	2	....	....	....	2	.....
Lumber,	1	3	3	2	5	4	3	2	3	16	....	....	....	21	.....
Paper,	....	3	1	1	2	3	5	....	1	14	....	....	....	15	.....
Printing,	....	....	....	1	....	....	....	....	....	1	....	....	....	1	.....
Textiles,	....	5	3	5	4	11	2	1	2	23	....	....	4	30	.....
Miscellaneous,	2	7	13	11	8	14	6	2	6	50	....	1	2	61	.....
Laundries,	....	....	....	....	....	....	....	....	....	.....	....	....	....	.....	.....
Metals,	107	350	372	412	397	358	254	14	183	2,051	....	....	2	2,250	.....
Mines,	16	200	205	214	208	214	153	64	172	980	....	....	....	1,216	.....
Public service,	64	227	227	248	206	232	123	4	94	1,225	....	2	2	1,327	.....
Tobacco,	....	1	....	....	....	....	....	....	....	.....	....	1	....	1	.....
Unclassified,	....	....	1	2	....	....	1	....	....	4	....	....	....	4	.....
Total,	208	835	874	929	861	872	583	93	471	4,584	....	4	10	5,162	5,162

SAFETY ATTACHMENT FOR LARGE BUCKETS.

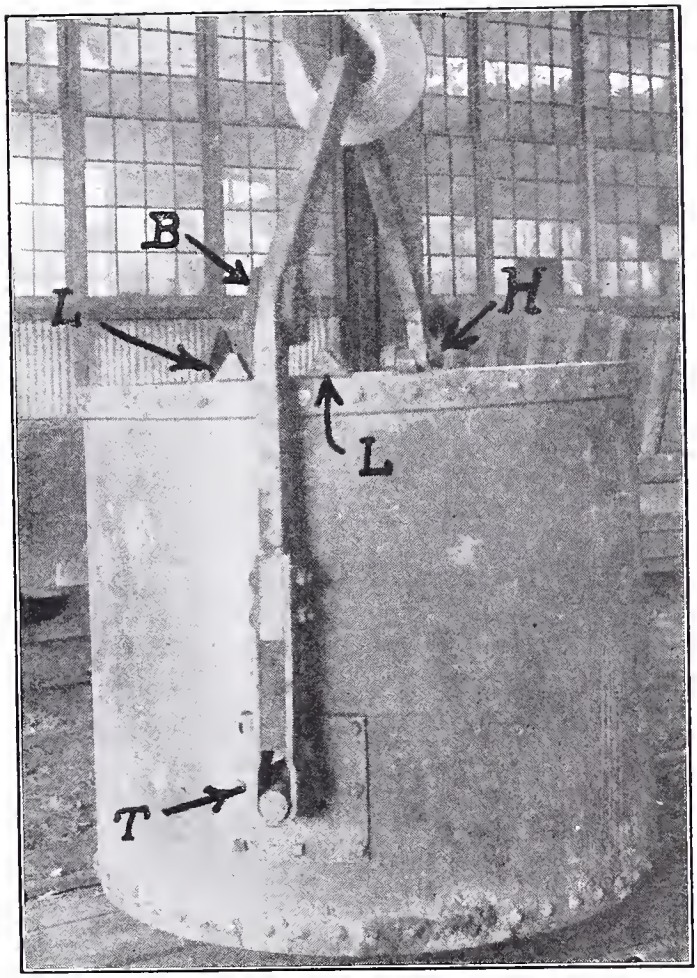
The accompanying illustration shows a method adopted by the Commonwealth Steel Company, Granite City, Ill., for preventing the bails of their large sand buckets from falling over and injuring workmen who may be standing nearby. In the illustration the lugs marked "L" are riveted to the rim of the bucket. When the bucket is lowered to the floor the lug "B" on the bail settles into the notch formed by the two lugs "L" and holds the bail upright. This settling movement is accomplished by the play provided at the trunion marked "T." When the hook has taken up the bucket, as shown, the play at the trunion "T" is sufficient to allow the lugs on the bail to clear the lugs on the rim, so that the bucket may be turned over. The latch "H" is provided to hold the bucket in an upright position when suspended from the hook and also to aid as an additional device when the bucket is standing alone.

Many steel companies and users of large buckets provide only the latch "H". The danger in handling a bucket equipped only with a latch of this kind is that if the workman forgets to throw this latch, the bail falls over and may cause severe injury to men standing nearby. The device shown is entirely automatic in its action, and in no way interferes with the use of the bucket. The Department of Labor and Industry believes that the installation of lugs of this character would eliminate this class of foundry accidents.

The photograph was furnished through the courtesy of E. B. Morgan, Safety Engineer of the Company.

TRIVIAL ACCIDENT RESULTS IN BLOOD POISONING.

An unusual accident has recently been reported to this Department whereby a young woman was caused considerable pain, discomfort and loss of time, owing to the fact that she did not pay proper attention to a minor injury which she had received. This incident serves very well as an illustration not only of the way in which minor accidents may lead to serious results, but also shows that accidents may occur from almost unbelievable and unthought of sources.



A "Safety First" Device.

A young telephone operator, performing her usual duties at the switchboard, caught a finger nail in some manner on the plug while placing the same into the switchboard. The finger nail was broken slightly and torn away from the skin. The wound seemed very insignificant and did not prevent her from continuing work.

The next day there was considerable pain and she was advised to consult a doctor and have the finger treated. Instead of doing so, however, she waited two or three days and then went to a druggist who gave her some salve which she placed on the wound. The finger was then bound up and she continued her work. When asked if she had seen a doctor, she replied that she had and that the finger was getting along all right.

It was noticed, several days later, however, that she was in great discomfort and finally the manager asked her if she had gone to a doctor. She admitted then that she had not and she was told to see a doctor immediately. Several days passed and as the finger still appeared to be giving her considerable pain, the manager asked her if she had done as he had requested her to do, and she finally admitted that up to that time no doctor had seen the wound. Immediate steps were taken to procure a physician and it was found that her hand was in a very serious condition as blood poisoning had set in and it was necessary to perform an operation.

This operation took place at least one month after the finger nail had been torn and as a result of the operation the young woman was compelled to be absent from work about two weeks. She has now, fortunately, fully recovered from the infection but the experience which she has gained and the suffering which she endured have conclusively led her to believe that it is dangerous to treat with indifference any wound, no matter how slight it may seem.

Whenever the skin is broken and the blood or inner tissues are thus exposed to infection, it should be a universal practice to apply an antiseptic in order to prevent the entrance of any disease germs. If this is done, the large number of time-lost-accidents due to infections will be materially reduced and much unnecessary suffering will be avoided.

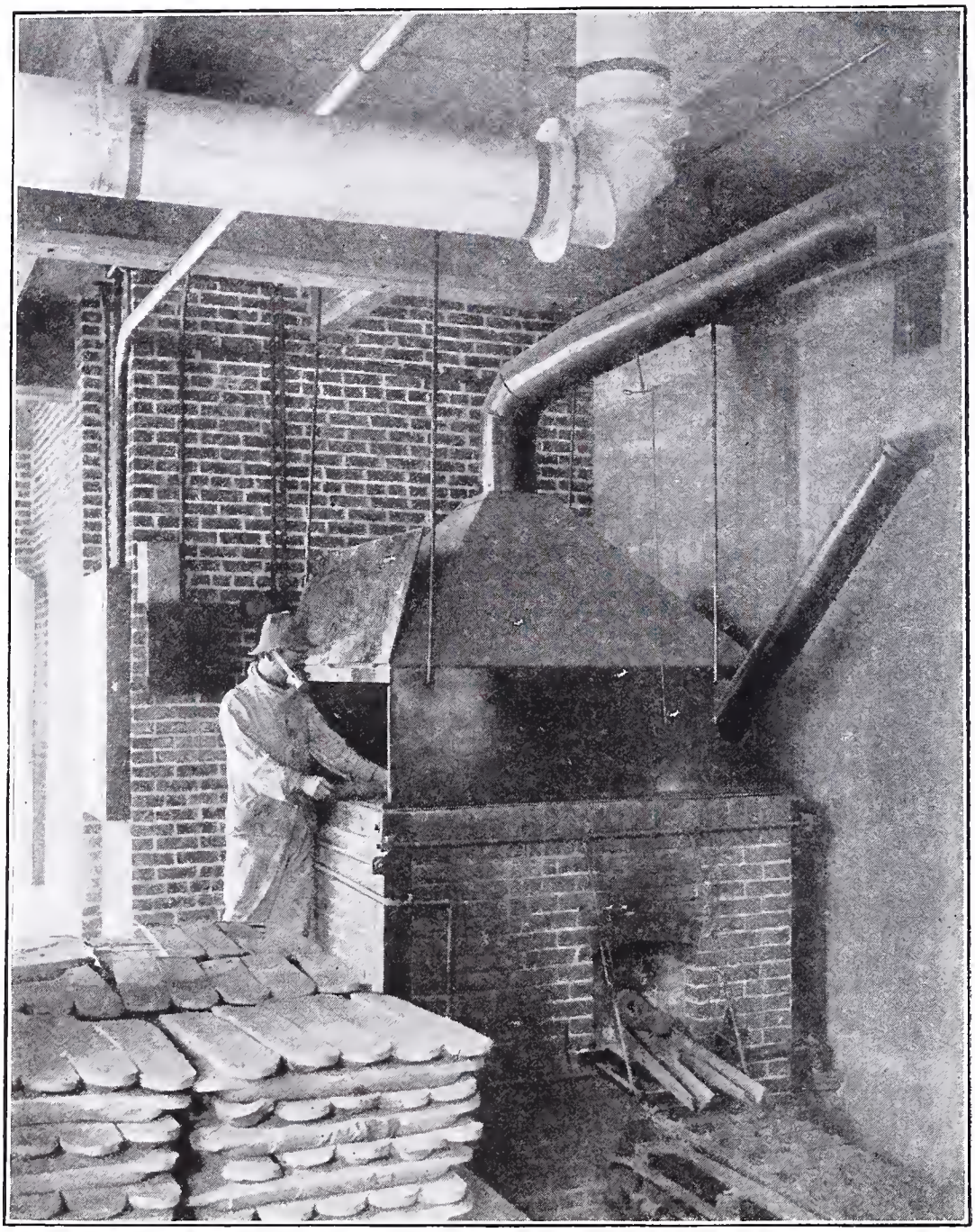
REPORT ON THE METHODS EMPLOYED IN THE WHITE LEAD AND THE LEAD OXIDE INDUSTRIES IN PENNSYLVANIA TO SAFEGUARD THE HEALTH OF THE WORKMEN.

I. INTRODUCTION.

Of all the metals used in the arts and industries, lead has the widest range of application. Dr. Thompson, in speaking on occupational diseases, names 86 trades in which lead is used, either in metallic form or its compounds—salts, alloys, etc. Even a brief description of all these trades, interesting as they may be to the student of industrial hygiene, would be irrelevant in this brief report, which is concerned only with the manufacture of the three salts of lead of greatest utility—carbonate, the yellow oxide, and the red oxide. These salts are extensively used in making paint, dry colors and glass. They are also employed in making rubber, putty powder for polishing and enameling, and glaze for glazing tiles, pots and bricks. Litharge and red lead are used in storage batteries. Plumbers use red lead to seal seams and joints in pipes. In carrying on the various processes of work involved in these different trades. as well as in the manufacture of the products upon which these elementary trades depend, a considerable number of workmen are brought into contact with lead. As lead and its compounds are poisonous, the opportunities for the development of industrial poisoning are abundant, varying with the personal habits of the workmen, the conditions of manufacture, and the form of lead employed in any particular industry. Statistical records collected from various sources show that lead poisoning is the most common occupational disease, the mortality from which exceeds that of any other metal.

Although lead in any form may cause poisoning, its salts and alloys are the most active toxic agents, which exploit themselves about the workroom in the form of dust. This ubiquitous dust may be inhaled into the lungs, carried to the mouth by the hands, or swallowed with food. Having gained entrance to the body, the poison mingles with the secretion, and in a subtle manner saps the vitality of the individual. Its effects upon the human body will be considered subsequently.

The danger, then, to the workers in the white lead and lead oxide industries lies in the dusty process associated therewith, and is greater the less the dust is under control. Of the compounds of



Exhaust System Used in Connection with Casting Blue Buckles.

lead, the most important ones in respect to plumbism are the carbonate and the oxides, because they are most employed in the industries.

A brief description of the different processes employed in the manufacture of white lead and the lead oxides is here given.

II. THE MANUFACTURE OF WHITE LEAD.

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1. THE OLD DUTCH PROCESS.

This process is more commonly employed in Pennsylvania than any other. It consists of forming basic lead carbonate (or white lead) from metallic lead by subjecting the latter to the vapors of acetic acid, carbon dioxide, water and heat for a period of one hundred days.

The following steps may be observed in tracing the process of the manufacture of white lead from the raw material to the finished product:

(a) *Casting of Blue Buckles.*—These buckles are thin circular plates of metallic lead five or six inches in diameter, and a quarter of an inch to an inch thick. They may have a circular rim and crossbars, or be cast solid. The casting is always mechanical. Pig lead and scrap from the mill are placed in large iron kettles, which, in all the plants inspected, were hooded to catch the escaping fumes. The scraps consists of cores of uncorroded lead and white lead. In handling it there is a possibility of creating dust in the casting room unless some precaution is employed to prevent it. In the plants inspected, this danger was overcome by moistening the scrap with water. The molten metal runs out of the kettle into molds, which travel along on a conveyor or endless chain, and as the chain turns over the buckles fall off and are collected in a heap nearby. They are then placed in trucks and conveyed to the stack house or corroding bed. This is usually a large one-story building, built of re-inforced concrete or stone, and is divided into stacks or chambers, with high walls, which open into a central corridor or yard. The stacks and yard are included under one roof.

(b) *Setting the Stack.*—The blue buckles are placed in porous earthenware pots, which contain dilute acetic acid (2-4%), and which are shaped so as to prevent the buckles from touching the acid. Each pot contains about 12 pounds of buckles. These pots are placed side by side in rows on a layer of tan bark about 6 to 8 inches deep. When a layer of pots is set, it is covered with a double layer of boards, and 6 to 8 inches of tan bark is placed over the boards. This pro-

cedure is repeated about twelve times, and the top layer is covered with tan bark to a depth of 18 inches. Each stack contains about 120 tons of metallic lead. A wooden ventilation pipe about 6 inches square, called a "gun," is placed in the centre of each layer, and extends several feet above the level of the top layer of the tan bark. This "gun" allows the gases or vapor and steam generated by chemical action to escape, and furnishes also a means of determining the temperature of the stack. The set stack is now left undisturbed for one hundred to one hundred and ten days.

During this time, the following changes take place:

1. The decomposition of the tan bark generates heat, which converts the acetic acid into a vapor. This vapor attacks the lead buckles and converts the metallic lead into lead acetate.

2. The decomposition of the tan generates carbonate dioxide, which then converts the lead acetate into lead carbonate. The weight of the white lead exceeds that of metallic lead by eighteen to twenty-five per cent.

(c) *Stripping or Discharging the Stacks.*—In stripping the stack, the first layer of tan is removed; then the cover boards. The workmen then pick up the pots by hand, and dump the corroded buckles into a bucket nearby, always knocking the pot against the side of the bucket to remove all the contents. This always creates dust. To prevent this dust from reaching the workmen, the buckets, in the majority of the plants inspected, were hooded, and attached to a large vacuum chain, a so-called "dragon," with an absolute pull. This process is repeated until the stack is emptied. The tan bark left in the stacks after the pots have been removed is full of lead particles. This is removed to the oxide department, or to a washing trough, where the tan bark is floated off and the carbonate reclaimed.

When the buckets are filled with white buckles, they are conveyed to the dump, which is the beginning of the separator system.

(d) *The Separating System.*—The crane bucket is placed directly on top of the dump hopper, and by mechanical means the bottom of the bucket is opened outward, and discharged its contents into the hopper. At this point considerable dust is made. To prevent its escape into the surrounding atmosphere, and thus imperiling the workmen, exhausts of varying efficiency were employed in the different plants visited. From the hopper the corroded and uncorroded lead passes to the first screen. Here the corroded lead is separated from the uncorroded portion of the buckles. The uncorroded portion is rolled into balls and returned to the melting pot. The corroded lead passes through the screen, and is forced into the dust separator proper. Then from the separator this corroded lead

is conveyed to the second screen, and thence to the first set of rolls. Here the corroded lead is reduced to a fine powder, the minute particles of blue lead are flattened out like a fish scale and caught on the screen and discarded to the oxide mill. The corroded lead then passes to the third screen and the second rolls, and thence to the fourth screen. All parts connected with the screens and rolls are carefully housed and connected with a dust collecting system.

(e) *The Water Mill System.*—From the fourth screen the corroded lead is carried by an elevator to a closed steel bunker. From this bunker the white lead is fed mechanically into a thrasher, where it first comes in contact with water and is reduced to a pulp. This pulp is then fed into large, high-speed, stone mills, ground therein twice, and then pumped into a classifier and mixed with a large volume of water. On leaving the classifier, the white lead and water enters a silk screen, and all that cannot pass through this screen is rejected and reground. From this screen the mass passes through a riffle box into the washing and settling tanks.

(f) *Subsequent Courses.*—After reaching the settling tanks, the lead and water may be disposed of in different ways.

1. The lead and water may be pumped into filter presses, where it is pressed into cakes. These cakes are carried through a tunnel dryer to a pulverizer and reduced to powder, and then placed in the barrel packer or carried to the oil mixer (or chaser), and incorporated with linseed oil.

2. The white lead from the settling pans is mechanically carried to the chaser, where the lead is mixed with oil, which displaces the water.

3. From the settling pans the lead and water are pumped into large copper drying pans, usually placed one over the other in the drying room, or kiln. This room is usually very hot, and the windows kept closed to favor drying. The lead remains in these pans until it is bone dry, and then the workmen enter the pans and shovel the dry lead into open trucks or barrels. It is then conveyed to a pulverizer, reduced to powder and barreled, or conveyed to the chaser and ground in oil.

2. THE CARTER PROCESS.

The Carter Process is a rapid way of producing basic lead carbonate from pig lead by the action of acetic acid, water, vapor and carbonate dioxide. The corroding time is reduced from one hundred days to thirty days. It is claimed that this process is more under control and the degree of corrosion is more complete than by the old Dutch process.

The pig lead is delivered by an automatic elevator to the melting pot, which is fired with a mixture of oil and air. This is hooded and connected with an exhaust system. The molten lead flows in a little stream to a temporary kettle, where it is met by a current of superheated steam, and reduced to dust (blue dust). This blue dust is discharged into a hopper and carried to the dust separating chamber, which is entirely closed, and shaken on the outside by a shake lever. From the dust separating chamber the dust is carried by a screw conveyor to a receiver, which discharges it into reels. These reels consist of large wooden cylinders, which revolve slowly so as to turn the blue powder over and over. The contents of the reels are moistened with water, and very dilute acetic acid added in very small quantities. Carbon dioxide generated in the power plant is then fed directly into the reels. As the reels revolve, automatic hammers strike the outside of the reels to prevent caking of the mass on the sides of the reels. This corroding process is continued for fifteen days. The mass is now in the shape of small balls, consisting of white lead on the outside and uncorroded lead in the centre. These balls are then removed from the reels, pulverized by rollers and recorroded. They are finally fed by conveyor belts into the finishing reels, where the corrosion is completed. The fully corroded lead is then conveyed by conveyor belts into the thrasher, where it is mixed with water, and then conveyed to the classifier.

The subsequent processes in handling the corroded lead are similar to those employed in the old Dutch process, and need no further description.

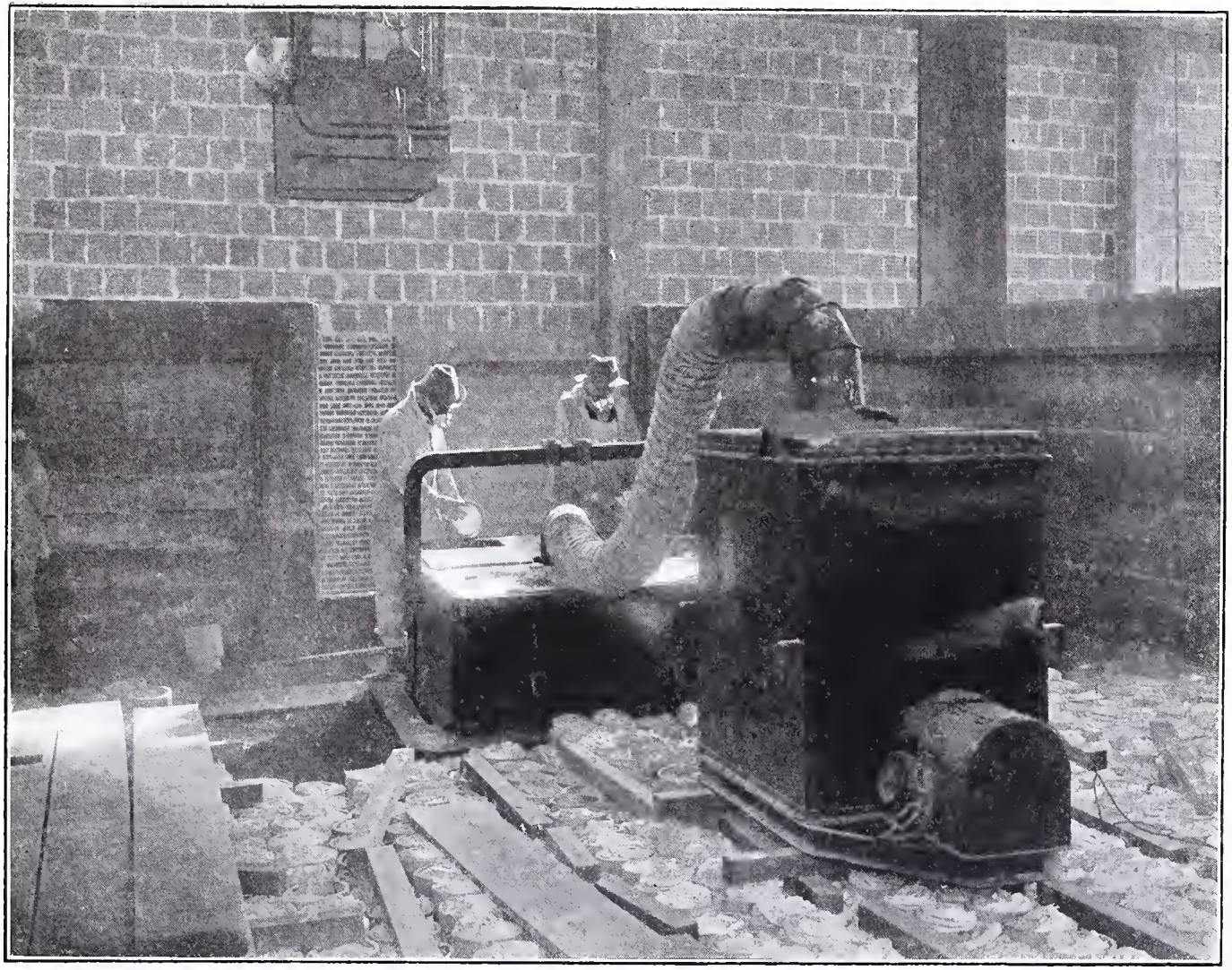
3. THE QUICK PRECIPITATION PROCESS.

Pig lead is melted in hooded kettles, from which the molton lead flows into a tank of water, where it is converted into feathery masses. This feathered lead is carried in pockets on a conveyor belt to the corroding tanks, where it is subjected to the action of water, acetic acid and air, which changes the lead into a mixture of oxide and carbonate. From the corroding tanks the mass is pumped into the precipitation tanks, in which carbon dioxide is introduced. The carbonate of lead settles, and is then pumped into the filter presses, from which the pasty mass is dropped into water and thoroughly washed.

The subsequent procedures are the same as obtain in the old Dutch process, pulp grinding and packing, packing dry, or grinding in oil and packing.

III. THE MANUFACTURE OF WHITE LEAD.

Litharge (PbO) and red oxide, or minium (Pb_3O_4), are the two oxides commonly used in the industrial arts. Trade secrets are associated with these processes in many plants. Hence, no extensive



Portable Dust Collecting Apparatus Used when Stripping White Lead Stock.

details can be given. The process is essentially one of oxidation in a furnace. In the first stage, or first burning, during which a limited amount of air and an excessive amount of heat are supplied for about thirty-six hours, litharge is formed. In the second stage, or second burning, the litharge is converted into red lead by heating in a moderate furnace, in the presence of an abundant supply of air.

The furnace is charged with a batch of pig lead or scrap. From time to time the contents of the furnace are raked with a long-handled hoe. The oven is emptied by raking out the charge into an open wheelbarrow. The front of the furnace is usually hooded, and connected with an exhaust to remove the fumes. The lead is now in the form of a light yellow powder, more or less lumpy, and is known as litharge. It is then fed into a crusher and carried to an air separating machine. From this machine the finest particles are carried to a "cyclone collector", and the coarse particles fall into the hopper, and thence into the packer. From the "cyclone collector" the dust is forced into the dust collecting system, and thence into the hopper, from which it is fed into the packer. It is then barreled, and is known as the yellow oxide of lead.

If the litharge is to be converted into red lead, it is removed from the crushing machine and fed into a reverberating furnace. The finished product is removed from the furnace, pulverized, collected and packed in the same way as litharge. Wither oxide may be ground in water.

The oxides are rather light and fluffy, and therefore, the oxide mill is usually more dusty than the white lead mill. Less men, however, are employed in the oxide mill. Nevertheless, all parts of the oxide mill should be carefully hooded and connected with a sufficient dust collecting system.

THE DUST COLLECTING SYSTEM.

Such a system is a necessary adjunct to the process of manufacture of lead salts, both on account of industrial economy and also to protect the workmen from the hazards of lead dust. The demands of the trade for the salts of lead in dry form is a third reason for operating this system.

This system consists of a dust house and collectors. The dust house is entirely separated from the rest of the factory. The collectors consist of long, narrow, canvas bags suspended from the ceiling of the dust house. The dust from the different parts of the separator, from the pulverizer and packer, from the chasers and from the dry pans, is forced by fans through pipes into the collectors. Much dust clings to the inside of these canvas bags, and is dislodged by striking the sides of the bags. This may be done by hand, which

is a dust creating method, or by mechanical shakers manipulated from outside the dust house. These bags are repaired from time to time. This also is a dusty process. The installation of a suitable exhaust in the dust house eliminates the dangers from dust and keeps the house clean. The collectors may end free with the ends tied in knots, or may open directly into a closed hopper into which the dust falls. From the hopper the lead dust may be fed mechanically into a water tank, or to the chaser or packer.

IV. LEAD POISONING.

From clinical experience it has been observed that the introduction of traces of lead into the human economy, often repeated and continued for a long period of time, causes more harm and produces more serious disease than the occasional introduction of lead in large amounts. Such conditions obtain in the lead industries. The portal of entry may be through the skin, the stomach or the lungs. The first is of no great consequence. Statistics show that the greatest danger results from absorption through the lungs.

Introduced in this way into the system, lead soon attacks the functional activities of the kidneys and liver. It early blocks the channels of escape and disturbs the equilibrium between the elimination and absorption. Lead accumulates in the system, thereby producing a toxaemia. It may be retained indefinitely or be eliminated intermittently. If the waste products of metabolism are not eliminated, an auto-intoxication follows. Later degenerative changes occur in the kidneys, the vascular system and the nervous system. Thus lead produces its effects in a slow and insidious manner, and the victim is wholly unconscious of the danger to which he is exposed until irreparable damage has been done. He enters a condition of chronic ill health. The blighting power of lead strikes most severely at young adult life, especially females, among whom the cerebral form of plumbism is most common.

The most striking symptom of lead poisoning is colic. This is usually preceded by a slight metallic taste in the mouth, loss of appetite and nausea, headache, extreme lassitude and constipation, and the features become pale and expressionless. These symptoms may continue for days or weeks, and if exposure to lead continues, are followed by sudden and severe pain in the abdomen near the navel. Vomiting usually occurs and constipation continues, or there may be diarrhea. The pain may be paroxysmal or constant, and during the height of its severity the patient may writhe in agony. It may last several days, but gradually lessens in severity. Simultaneously with the colic, intermittent cramp-like pains may appear in the arms and legs, especially in the neighborhood of the joints.

A residual tenderness or soreness remains which may radiate to either side. The abdomen is usually retracted, the pupils are unequal, and the pulse is slow. These attacks may recur if the victim becomes careless.

In persons suffering from plumbism, there usually develops a blue line along the margin of the gums close to the teeth, which is more conspicuous on the lower jaw (Bertron's line). It is formed by sulphurretted hydrogen from decaying food between the teeth combined with lead to form lead sulphide. This blue line often remains after the other symptoms have disappeared. It is a valuable sign only when accompanied by other symptoms.

As the disease advances the pallor becomes more marked. This is due to anemia. The red blood cells are reduced to one-half, or even one-third of their normal number, and the coloring matter of the blood is greatly reduced. The general nutrition becomes impaired and causes extreme emaciation.

Another important symptom is muscular paralysis, which generally first involves the extensor muscles of the wrist, producing the characteristic "wrist drop." This is general bilateral, and usually appears subsequent to the colic. It may be transitory or permanent. The muscles soon atrophy, and early show the reaction of degeneration. In advancing stages of the disease marked degenerative changes occur in the brain, which may manifest themselves in the form of hysteria, delirium, convulsions or insanity. There is a special form of disease which occurs in young females. It is usually preceded by severe headache, followed by sudden convulsions and coma, and may be fatal in two or three days, and resembles eclampsia. This disease is rare in this country.

Lead sometimes produces blindness. It may be temporary or permanent. It is due to neuro-retinitis, with or without hemorrhages.

Arteric-sclerosis, with enlargement of the heart and Bright's disease, occur in the final stages.

V. PREVENTION AND PROTECTION.

Inasmuch as lead is employed more extensively in the arts and industries than any other metal, and also is possessed with marked poisonous properties, it is the paramount duty of industrial hygiene to protect the workmen from this insidious foe, and thus prevent needless waste of human energy. This insidious foe lurks about the work room, chiefly in the form of dust, and efficient methods must be put into practice to eliminate it. These methods are:

1. To prevent the formation of dust by adding water, oil or any other suitable liquid to the dust, or install suitable closed automatic devices.

2. Separate the dusty processes from the non-dusty processes by suitably constructed apparatus.

3. Remove the dust at its point of origin by a system of exhaust ventilation. This should include a dust collecting system.

4. Safeguard the workmen by the following measures:

(a) Maintain a general condition of cleanliness in the factory.

(b) Provide the workmen with clothing adapted to their work. This should include overalls, jumpers, caps and gloves.

(c) Provide suitable washing and dressing rooms, supplied with warm water, soap and towels, also bathing facilities and proper lunch rooms.

(d) Enforce the use of respirators and headgears.

(e) Provide for the physical examination of the employees both before beginning work and subsequently at stated periods.

In many States these methods have been incorporated into law and placed on the statute book. In Pennsylvania the lead industry is now under legislative control, and throughout the State the requirements of the Lead Poisoning Act have been met by the majority of the factories.

A description of the methods employed to safeguard the health of the employees in the several factories in Pennsylvania is here given.

FACTORY NO. 1.

This is a very extensive plant, consisting of about 30 buildings. The more recently constructed buildings are made of reinforced concrete. One mill which was partially destroyed by fire is undergoing extensive improvements. In this plant are manufactured the following products.

1. Lead carbonate by the old Dutch process only.
2. Red oxide.
3. Dry colors—

Yellow or neutral chromate of lead.

Vermillion or basic chromate of lead.

Green—a mixture of neutral chromate and Prussian blue.

There is also a paint mixing department.

The White Lead Department.—The melting pot is located in a reinforced concrete building. The stack house is in a double building made of reinforced concrete, with convenient passageways around each stack, safeguarded by heavy iron railings. The corroded buckles are dumped into crane buckets provided with a removable hood connected with a portable exhaust fan. When full these buckets

without cover are carried by an electric crane to the dump, which is located up near the roof, and far removed from the workmen. To avoid danger at this point, the crane buckets should be covered while in transit.

From the dump the corroded lead falls into the separating mill, all parts of which are carefully housed and connected by exhausts with the dust collecting house. In the drying room the white lead is removed from the drying pans by hand and conveyed in open barrels to the chaser. These pans will soon be replaced by a textile drying system and an automatic conveyor, which will eliminate all danger at this point. The installation of this system has been delayed because of fire.

The Oxide Mill.—The oxides of lead are manufactured in this plant on a very extensive scale. In the old building are located 25 furnaces. Of this number 21 are of the old type, which are hooded. These hoods remove the dust generated in discharging the furnaces. In this same building are 4 new furnaces, which are discharged mechanically into trucks placed directly in the furnace behind closed doors. Air is forced into the furnace room to reduce the temperature. Four additional new mechanical furnaces have been installed in the new building. All furnaces can be used for either the first or second burning. Litharge when introduced into any furnace is charged wet.

All dusty processes in the oxide mill are equipped with an efficient exhaust. The dust collecting system consists of large canvas bags supended from hole in the ceiling. These bags are easy of access for cleaning and repair. They empty into a hopper from which the dust is automatically carried up a screw conveyor to the packing department. This department is unusually free from dust.

The Dry Color Department.—The different colors are made in a watery solution in large wooden vats, and heated by steam. They are then precipitated from the watery solution and washed in clean water. The precipitate is then run through filter presses and formed into cakes, which are dried in the drying room. The dry cakes are dumped into barrels and taken to the mixing room. In this room layers of different colors are spread on the floor on top of each other and mixed by turning over the layers with a shovel. Overhead is a hood with a very strong exhaust. The men must stand under this hood to mix the colors, because being very heavy, which is a characteristic of lead salts, they can be handled only at short range. The exhaust creates a dusty atmosphere in which the men must work, and they complain of it. It is believed no exhaust would be safer for the men under these conditions. This point merits further consideration.

This extensive plant throughout its different departments is well equipped with devices aiming to safeguard the health and increase the efficiency of the workmen. A general condition and neatness and cleanliness prevails. These conditions are fostered by prizes in the shape of money, which are given to the foremen.

The Welfare Department.—This department is splendidly equipped in every detail, and is housed in two divisions in reinforced concrete buildings, one of which has just been completed. The toilets and urinals are the latest design. Wash sinks and shower baths are conveniently arranged and properly equipped for washing and bathing. Double steel lockers are provided for each man; one for the street clothes, which contains a supply of towels, comb and a stool, and the other for working clothes, which contains overalls and a respirator. All the overalls are washed in the company's laundry. They are distributed daily in sections to the men.

The lunch room is a large, well-lighted room over the dressing rooms. It contains chairs, tables, spittoons, a wash sink, drinking fountains and a Victrola. The dressing, wash and lunch rooms are kept neat and clean.

An office is provided for the company's doctor, who visits this office twice a week. All new employees are examined on admission to the plant, and re-examined every four months. A general inspection of the men throughout the plant is made once a month, and those employed in dusty processes are examined once a week. Records of these examinations are made and filed in the doctor's office.

FACTORY NO. 2.

This is a very old plant, and the buildings are built of stone. It includes a white lead mill and an oxide factory.

White Lead Department.—The melting pot is separately housed and well hooded. The blue buckles are carried on a narrow railway to the stack yard, preparatory to setting the stack. When the stack is being discharged the corroded buckles are dumped into open boxes and these boxes when full are lowered by hand power and emptied in large open trucks. This is a dangerous procedure, as no precautions are taken to control the dust. The workmen wear respirators and gloves.

The large truck filled with the corroded contents of the stack is then conveyed on the narrow railway through the yard up an incline plane to the dump. White lead dust is very liable to arise on this journey from the stack to the dump, and places the workmen in jeopardy.

Over the dump is built a house large enough to receive the truck and its contents, and is supplied with an exhauster. In this house the truck is placed over the dump hopper, and the doors closed. The truck is then dumped and the contents fall into the separator. All parts of the machinery from the separator to the drying pans, in which the dusty processes occur, are covered and connected by an exhaust to the dust collecting system.

The drying room is a very dangerous place, because no provision is made to eliminate the danger from dust. This room contains large copper drying pans arranged in a single tier, in which is dumped the contents of the separating tanks. Here the lead dries to bone dryness. To bring this about the room is kept very hot and the windows closed. When a pan is to be emptied the windows are opened and the exhaust fan at the end of the room put into action. Then the workmen shovel the dry white lead into open barrels. When filled these barrels, still uncovered, are conveyed by hand trucks to the oil mixer or the pulverizer, both of which are adequately housed and afford protection from dust.

The Oxide Factory.—In this part of the plant the furnaces are not hooded, but have within a fairly strong draft. This, however, does not eliminate the possibility of dust arising at the furnace opening when discharging the contents of the oven.

The Welfare Department.—The washing and dressing rooms are combined in one, and are supplied with lockers, wash basins and shower baths. The urinals and water-closets are in a separate room. Adjacent to this room is the lunch room. Milk is furnished the workmen, and also soap, towels, respirators and overalls. This whole department is dirty and unkept, and uninviting.

The workmen are examined once a week by the company's physician in a room set aside for the purpose. Records of this work are made and filed by the doctor.

FACTORY NO. 3.

This plant is an old establishment, consisting of a group of buildings both old and new. The newest buildings are made of reinforced concrete. Extensive improvements, in the old buildings are being made.

The White Lead Department.—White lead is here manufactured both by the old Dutch process and the Carter process. In both processes all parts of machinery wherein resides dust hazard are carefully housed, and connected by an efficient exhauster, with an elaborate dust collecting system.

The Oxide Mill.—Red lead is here made by a special trade process, details of which it is not permissible to publish. The general condition of the mill, however, is one of cleanliness.

The Welfare Department.—The physical welfare of the men is conducted in the infirmary, under the supervision of two physicians, who are on duty at stated hours every working day. New employees are examined as soon as possible after beginning work. The men who are engaged in dusty work are examined once a week; the rest of the men once a month. All cases which show symptoms of extreme lassitude, constipation and loss of appetite are regarded as suspicious, and are transferred to another department. All cases suffering from colic are advised to seek employment outside the lead industry. This affords a close control over plumbism. Extensive records are made and filed by the physicians in charge.

The washing and dressing rooms are adequately equipped with washing and bathing facilities. The lunch room is neat and clean, and plenty of milk is supplied to the workmen. This part of the welfare department is located in an old building, and the equipment is somewhat antiquated. This will soon be replaced by an elaborate array of washing, dressing and lunch rooms, which are nearing completion. They will be equipped with every convenience conducive to the health and welfare of the workmen.

FACTORY NO. 4.

This is an old factory building of brick. The oxides only are manufactured here. Litharge is made in a Cupell furnace, which is hooded in front to remove the fumes escaping therefrom. By means of a mechanical run-off the litharge is collected in an iron wheelbarrow placed in front of the furnace. The litharge is then dumped on the floor to cool in front of the crusher. When cool it is fed by shovel into the crusher. This is a dusty process, and there is no exhaust connected therewith to remove the dust. The air separating machine, the cyclone collector and the dust bags are all adequately housed to prevent dust dissemination. The packing is done by shoveling the litharge into barrels from a bin.

The red oxide is made from litharge by heating in a brick furnace, located near the centre of the work room, which is not hooded. Hand raking is done with a hoe, and the contents of the furnace are removed with a shovel or by raking into open trucks.

At the grinding machine and at the packer no provision is made to prevent dust reaching the workmen. There is considerable dust about the work room. An efficient exhaust system is needed. Plans for the installation of such a system are being drawn up by the company.

The Welfare Department.—Suitable and adequate provision has been made in this department for the welfare of the men. The dressing, washing and lunch rooms are arranged in the order given, and are entirely separated from the rest of the plant, access to which

is by two doors. The dressing room contains a double row of steel lockers. One row contains the street clothes, and the other row the work clothes and a cake of soap. Two towels are given to each workmen. These are kept in the locker with the street clothes. A pair of overalls, a jumper, and also a respirator are kept in the locker with the working clothes. Drinking fountains are distributed about the plant.

The wash room contains two urinals, two toilets, eight enamel wash basins and three shower baths. Wooden runways and floor gratings are also supplied. Time allowance at the company's expense is allotted and bath records made. The lunch room adjoins the wash room, and is provided with a long dining table and chairs. All these rooms are clean, light and cheerful.

The medical examination consists of periodic inspections once a week by the company's doctor. All suspicious-looking cases receive subsequently a careful examination. The records of the examinations are filed in the office of the company. Printed instructions for the workmen are posted in conspicuous places.

FACTORY NO. 5.

This is an old plant, consisting of five buildings and employs about 75 men. White lead only is made in this factory, by the old Dutch process. The melting pot is adequately hooded, and is located at one end of the stack house, which is a building of reinforced concrete, and contains 60 stacks. When unloading a stack the workmen dump the corroded buckles, which are more or less dusty, into hooded crane buckets, connected with an exhaust fan. All the men wore respirators. Two of the men had removed their gloves.

From the stack the corroded buckles are carried by electric crane to the dump hopper, and dumped into a screw conveyor, which carries the contents of the hopper into the separator. At the dump the crane bucket does not fit sungly into the hopper, neither is there a suitable exhaust; hence, considerable dust escapes into the surrounding atmosphere and settles on the floor and adjacent walls.

All other parts of machinery where dust is generated are carefully housed and connected by exhausts with an efficient dust collecting system. From the carbonate hoppers to the drying pans, the process is conducted in water. The drying pans are located in the separating room, and are arranged in tiers entirely housed in. From the drying pans the white lead is carried by screw conveyors to the dry bin or to the oil mixer. Packing is done under a hooded packer. The white lead is fed mechanically into the chaser, which is entirely enclosed with a glass front for observation.

The Welfare Department.—This department is excellently equipped, neat and clean. A safety committee, composed of foreman and superintendent, look after the interests of the workmen. Printed instructions in different languages are posted in conspicuous places. The welfare building is built of reinforced concrete.

In the wash room are 48 vitrolite bowls, 7 toilets, 4 urinals and 8 shower baths, neatly screened from the main wash room. Hot water is supplied by an instantaneous heater.. Wooden runways and gratings lie on the floor in proper position.

The dressing room is supplied with two sets of steel lockers, one for street clothes, the other for the working clothes, and are widely separated from each other. A piece of soap, a nail brush and a respirator are supplied to each man. Every week two wash towels, one bath towel and one set of overalls are given each man. A janitor has charge of this department.

The lunch room is located on the floor below the washing and dressing rooms. It is roomy, light and cheerful. Leading therefrom is a large open veranda or lounging pavilion. Drinking fountains are placed in conspicuous places around the plant.

The company's physician makes a weekly inspection of all employees, and refers all suspicious-looking cases to his office for further examination and treatment.

The records of the baths and of the examining physician are kept in the company's office.

STATE WORKMEN'S COMPENSATION BOARD.

MEMBERS OF THE BOARD.

Harry A. Mackey, Chairman,
John A. Scott,
James W. Leech,
John Price Jackson, Ex-Officio.

Francis Shunk Brown, Attorney-General, Counsel Ex-Officio,
Francis H. Bohlen, Counsel.
H. C. Hubler, Associate Counsel,
Samuel I. Spyker, Associate Counsel,
Lee Solomon, Secretary.

The ten Referees who are assigned to the eight Workmen's Compensation Districts into which the Commonwealth has been divided, for the administration of the Act, are as follows:

W. B. Scott, attorney at law, 606 W. Lehigh Ave., Philadelphia.
Jacob Snyder, boiler inspector, Roaring Springs, Blair County.
L. E. Christley, attorney at law, Butler.
Paul Houck, clerk to county commissioners of Schuylkill, and former legislator, Shenandoah.
Thomas J. Dunn, safety expert and liability adjuster, Pittsburgh.
W. W. Champion, attorney at law, Williamsport.
George C. Klauder, Bala, Montgomery County.
George W. Beemer, attorney at law, Scranton.
E. K. Saylor, superintendent water works and former factory inspector, Lancaster.
Charles H. Young, attorney at law, New Castle.

WHAT AN EMPLOYER SHOULD DO AFTER AN ACCIDENT.

The State Workmen's Compensation Board has issued the ten following helpful suggestions to guide employers to meet the provisions of the Workmen's Compensation Act after an accident.

1. As soon as an accident occurs the employer should immediately furnish to the injured employee such medical or surgical attendance as the case may require.

2. Ascertain all the facts and fill out the accident report furnished by the Department of Labor and Industry. It will not be necessary to designate the persons dependent upon an injured employe unless the accident results in death.

3. Ascertain the average weekly earnings of the injured or deceased employe.

4. Consult Sections 306 and 307 of the Workmen's Compensation Act for the amount of compensation and the length of time during which it must be paid.

5. If the disability of an injured employe is of more than two weeks' duration, or if death follows the injury, an effort should be made on or after the 14th day following the accident to effect an agreement between the injured employee, or the dependents of the deceased employee, and the employer.

6. Compensation under the agreement must begin the first week after the 14th day following the accident and should continue as provided for in the agreement.

7. A receipt should be taken for all payments on form W-51.

8. Should the employer or injured employee or dependents agree upon the facts but fail to agree as to compensation payable, the matter should be submitted to the Workmen's Compensation Board, as provided for in Section 412 of the Act on forms Nos. W-18 and W-19, which can be obtained from the Workmen's Compensation Bureau, Department of Labor and Industry, Harrisburg, Pa.

9. Should the employer and the injured employee or dependent fail to agree upon the facts, the employer should await the filing of a Claim Petition by his injured employee. The employer should then answer the petition as the case may warrant.

10. The Workmen's Compensation Referees stand ready at all times to give you advice and assistance.

RULINGS OF THE STATE WORKMEN'S COMPENSATION BOARD.

Rulings made by the State Workmen's Compensation Board set forth in effect the following conditions:

> That all State, County, City, Borough, Township, School, District, and all other governmental authorities created by the laws of this Commonwealth, and having the right to levy taxes shall be exempt from insuring their compensation liability, upon application to the Workmen's Compensation Board.

Note:—Under the Act, none of the above governmental units may reject Article III of the Act, which provides compensation to injured employes.

That all information given by persons, companies, or corporations applying for exemption from insuring shall be considered as strictly confidential. That no information contained in such applications shall be given out by any employees or attaches of the office, and such information cannot be used for purposes of taxation.

That all persons appointed by and on the payrolls of a State, County, City, Borough, School District, Township, and all other govermental authorities created by the laws of this Commonwealth, are employees of such govermental units for the purpose of compensation.

That the ordinary private chauffeur, while acting as such, is engaged in domestic service within the meaning of the law, and is therefore, not covered by the Workmen's Compensation Act of 1915.

That Charitable Corporations, colleges, hospitals, etc., being corporations not for profit are employers within meaning of the Act, and that if they do not give to their employes the notices provided in Section 302, they will be liable for compensation under Article III.

The Board declined to give a ruling as to the liability (under Article II) of a charitable corporation which rejects payment of compensation (under Article III), as this question is one for the determination of the courts and not the Board.

THE WORKMEN'S COMPENSATION ACT WILL NOT CAUSE DISCRIMINATION AGAINST MARRIED MEN.

The argument that the State Workmen's Compensation Act would tend to keep from employment married men with families has been vigorously refuted by James W. Leech, member of the Workmen's Compensation Board, in a recent address before the Chamber of Commerce, Johnstown, Pa.

Mr. Leech quoted John Mitchell, former President of the United Mine Workers of America and now chairman of the Industrial Commission of New York State, in proving that the Workmen's Compensation Law in New York State has not resulted in any discrimination against married men, regardless of the number of their children.

"While certain interests are circulating statements throughout Pennsylvania that the provisions of the Workmen's Compensation Act, requiring greater compensation to be paid to families of married

men killed at work than is necessary in the case of single men, will keep married men out of employment, those statements are without foundation and apparently are made to influence public opinion against the Act," declared Mr. Leech.

"I was told by Mr. Mitchell in New York just a short time ago that married men in New York State have suffered absolutely no ill effects from the enforcement of the New York Act. He asked me at that time if I imagained for an instant that the public would tolerate such needless discrimination because a man had assumed the responsibility of being the head of a family. He assured me that if such discrimination should develop in New York State that the outcry by the general public and the working men themselves against such discrimination would be tremendous.

"Why should there be any discrimination against the married man? The State Insurance Fund, which will offer compensation insurance at 10 per cent. below the rates charged by stock companies and will afford complete security, will insure married employes at the same rate as is charged for single men. The approved insurance rates for all companies show no discrimination against married employes. The cost of insurance to an employer is the same whether employees are married or single.

"Every employer will tell you that a married man is less liable to accident than a single man. A married employee is more careful, is less liable to show indifference to danger and is more regular in his employment.

"Although speaking as a single member of the Workmen's Compensation Board of the State I feel confident that the other members of the Board hold views similar to mine and that the married men in employment may be assured that the Workmen's Compensation Board of Pennsylvania will make every effort to protect them."

FACTS REGARDING PENNSYLVANIA INDUSTRIES DURING 1914.

The total market value of products of 20,571 Pennsylvania Industries in 1914 was $3,245,857,000. Capital invested in these industries was $2,340,933,300. The total amount of wages and salaries paid by these industries during 1914 was $685,412,700. Reports were received from 7,548 more industries in 1914 than in 1913.

These statistics were collected and compiled in the Bureau of Statistics and Information of the Department of Labor and Industry.

Pennsylvania industrial establishments, reporting during 1914, gave employment to 1,066,486 persons. Of that number 775,932 were Americans, 276,339 were foreigners and 14,215 were negroes. The division by sexes was 850,187 males and 216,299 females. Included in the total number of employees were 12,192 males under sixteen years of age and 14,187 females under sixteen years of age. The number of salaried men and office workers was reported as 106,108

Analysis of the total amount paid in wages during 1914 shows that males received $612,753,600 while females received $72,669,100. Males under sixteen received $2,723,200; females under sixteen received $2,719,500.

The amount paid salaried men and office workers was $128,111,700, wages paid all other employees aggregated $557,311,000. The average daily wage paid only to wage earners was $2.07.

Americans comprised 72.7 per centum of the total number of employees: foreigners 25.9 per centum; negroes 1.4 per centum; females under sixteen 1.3 per centum; males under sixteen, 1.1 per centum.

These statistics, and all other data collected by the Bureau of Statistics and Information concerning the industries of Pennsylvania, will be published in an annual production report in a more elaborate form for 1914 than has heretofore been the custom.

In addition to giving the totals by industries, there will be tables showing the production by counties. These county figures will give the number of establishments by industries in each county with the total number of employees in each industry.

ACTIVITIES OF THE STATE EMPLOYMENT BUREAU.

The employment Bureau of the Department of Labor and Industry is now engaged in the work of bringing together the employer without employees and the worker without employment. The central office and clearing house of the Bureau is located in the Masonic Temple at Harrisburg, Pa. A branch agency of the Bureau is located at 1519 Arch Street, Philadelphia. Another branch agency is located in the Hannan Building, Johnstown. Other agencies are soon to be established in various industrial centers of the State.

Unusually heavy demands for work and workers are pouring into the central office of the Bureau, as well as the branch offices.

An example of the great demand for farm laborers is furnished by a letter received at the Bureau from the proprietors of a large fruit and stock farm in central Pennsylvania. They wrote: "We want a married man not over 45 years of age, preferably one experienced in farming. We will pay $25.00 per month the first year, give free house rent, garden, truck patch, twenty-five bushels of potatoes, fatten two hogs and give the use of a milk cow."

The rush of war orders has caused great demand for workers in steel plants and many of these demands have been met through the Departmental Bureau.

During the first two weeks following the establishment of the Bureau applications for work came principally from men and women seeking clerical or similar indoor employment. A number of women sought work in their own homes, crocheting, sewing or letter writing. Many laborers and skilled mechanics filed their applications for work and were immediately notified where they could obtain employment.

The first application for a job came from an unemployed waiter, who wrote "that any sort of work" would be satisfactory. He stated as his preference, a position as janitor and added, that considerable experience in amateur photography might qualify him for work in some photographic studio.

One man sought information regarding opportunities for work in Colorado, Canada or Alaska. He was notified that his request was turned over to the Federal Employment Bureau, as the State Department Bureau concentrates its activities within the limits of Pennsylvania.

A "Safety Engineer" who has specialized for twelve years in the installation of safety devices in manufacturing plants applied for a permanent position with any big industrial concern.

The same mail that brought a letter from a consulting engineer and sales manager, who desired a position at a salary of $7,500 a year, brought also an application "for any sort of work" from a young negro, who is earning $20.00 a month as a club attendant.

From a man, with a wife and six children, who declared himself "sober and not profane" came a request for work as a machinist. A gas meter repairer wanted employment. A business school graduate wanted clerical work for $15.00 a week. A grocery salesman or manager sought a position. A foreman of road workers or time-keeper wanted a place with a contracting firm.

Other applications for employment included night-watchmen, teamsters, trolley motormen, clerks and stenographers, both men and women.

Every request for employment and employees is complied in the Employment Bureau and printed forms are sent to every applicant that the definite qualifications of each unemployed worker as well as the character of each position for which employers seek employees, may be definitely established.

ATTORNEY GENERAL BROWN GIVES RULING ON EMPLOYMENT CERTIFICATES FOR CHILD WORKERS.

Attorney General Brown has decided that employment certificates issued to children before January 1, 1916, will be valid until the holders become sixteen year of age. He holds, however, that after January 1, these children must attend continuation schools for eight hours a week, and cannot be employed more than nine hours a day, fifty-one hours a week. This decision was given in response to a request from Commissioner John Price Jackson of the Department of Labor and Industry.

Active preparations for meeting the requirements of this new law are under way in Philadelphia, Pittsburgh, Scranton, Wilkes-Barre, Pottstown, Altoona, Harrisburg, Allentown, Easton, Mauch Chunk, Pottsville and other cities throughout the Commonwealth.

The State Board of Education has issued a pamphlet of instruction concerning the Child Labor Act and continuation schools. This pamphlet is being sent to every employer in Pennsylvania and to the authorities in every school district. It sets forth fully, the requirements of the new law. It also gives the standards of physical fitness for the guidance of physicians in examining minors who apply for employment certificates after January 1st.

GOVERNOR BRUMBAUGH DISCUSSES CONTINUATION SCHOOLS.

Governor Brumbaugh has issued the following statement regarding the establishment of continuation schools throughout Pennsylvania under the Child Labor Act which is effective January 1, 1916.

"Reports made to me by the State Departments of Public Instruction and Labor and Industry, which are co-operating to obtain the establishment of continuation schools, indicate that at least three-quarters of the children now working in this State will be provided with continuation school facilities.

"In every industrial community in this State active steps have been taken to establish continuation classes. Every boy or girl under sixteen years of age, employed after January 1st, must attend one of these classes at least eight hours a week.

"I am especially pleased with the attitude which employers of children generally have assumed. I am informed that wherever the school men have gone to places of business personally and talked with employers, explaining to them the benefits which would accrue both to them and to their young employees under this Child Labor Law, that they have expressed a willingness to meet all its provisions. In fact, some firms which had expressed themselves as opposed to the new law, have agreed to furnish space in their establishments for conducting continuation classes, and a few have even agreed to pay the teachers.

"I am particularly pleased with the manner in which the situation has been handled in Philadelphia. Four distinct steps have been taken by the Board of Education in that City.

"In the first place, an associate superintendent of schools was elected, whose duty it is to arrange for the establishment of continuation schools.

"Next, the Bureau of Compulsory Education was re-organized. Ten branch offices have been established throughout the city for the issuance of employment certificates, the physical examination of children, and as headquarters for the Compulsory Attendance Officers. In addition to this, these branch offices will also do work along the line of vocational guidance by endeavoring to find places for children desiring to work, and of finding employees for firms desiring to hire children under sixteen.

"Third, the Board has under consideration the salary schedule for teachers in the continuation classes. It is the intention to pay teachers in these classes from one to two hundred dollars more a year than will be paid to the regular grade teachers.

"Fourth, the Board has adopted a general policy of endeavoring to open as rapidly as possible, after January 1st continuation classes for all those receiving employment certificates and entering upon employment at that time, and all the additional classes needed in the regions where the number of children now employed is greatest. In addition, as rapidly as possible the schools already established in business and industrial plants will be taken over by the Board.

"The Philadelphia Board expects to employ at least one hundred teachers in 1916, and I am sure that January will see at least seventy-five per cent. of the working children under sixteen in that city, attending continuation classes.

"In Pittsburgh a complete canvass of the city has been made to ascertain the number of children in employment. Provision has been made for the establishment of schools or classes in various sections of that city. I would not be surprised to see every working child in Pittsburgh attending continuation classes with the beginning of the new year.

"In Bethlehem the high school will be used to house the continuation classes. The regular classes adjourn early and the continuation classes will have full use of the school building from three to five every afternoon.

"The school authorities of Reading are at present interviewing manufacturers on the subject of organizing continuation school. Dr. Foos, Superintendent of Schools, reports that in all these interviews he has been cordially received and that the outlook for the success of the schools seems very encouraging.

"Complete arrangements for the establishment of continuation classes are also being made in Scranton, Wilkes-Barre, Allentown, Johnstown, Altoona, Lebanon, Easton, Beaver Falls, Mauch Chunk, Harrisburg, Williamsport, York, and many smaller communities.

"The fact that schools may be conducted eight hours on one day, or four hours on two days, or two hours on four days, and that almost any seventh and eighth grade teacher will be able to give the instruction required, has done much to facilitate the establishment of these schools.

"I am indeed grateful for the splendid spirit of co-operation which has been shown both by the school men and employers of children in their efforts to raise the standard of citizenship in our glorious Commonwealth."

INDUSTRIAL BOARD RULES AGAINST "SLEEPING HOURS" IN TELEPHONE EXCHANGES.

The Industrial Board of the Department of Labor and Industry has disallowed a petition from the Eastern and Western Independent Telephone Associations of Pennsylvania asking that hours of women

operators between 11:30 at night and 5:30 in the morning be known as "sleeping hours" in exchanges where not more than six calls are made during that period.

The Associations stated in their petition that comfortable sleeping quarters would be provided women operators in the telephone exchanges where continuous service is furnished but where the average number of calls between the hours designated does not exceed six. They requested that such "Sleeping hours" should not be considered a part of the regular working hours. The petition further stated that in no event shall female telephone operators be employed or permitted to work in or at a telephone exchange for more than fifty-four hours in any one week.

In refusing to grant the petition the Industrial Board declared:

"A change in these particulars in the interpretation of the Women's Labor Act, is not of general necessity to the telephone companies of the State employing operators in similar night work and performing similar service to the community.

"The Women's Labor Act was enacted for the benefit of women in industry, therefore, any change in its interpretation must be clearly shown to be at least no detriment to the women affected.

"An inquiry among the telephone operators affected, would indicate that the change as requested would be, as far as now can be ascertained to their detriment."

APPRECIATION OF COURTESIES AND CO-OPERATION OF PENNSYLVANIA FAIR ASSOCIATIONS.

The Traveling Safety Exhibit, during the past fall, was sent to various fairs throughout the State The Department wishes to acknowledge and thank the Fair Associations in this way for their kind and courteous treatment and for the courtesies which were extended to the Department representatives during the time the exhibit was on the various fair grounds.

Through the co-operation of the Engineering Department of the Pennsylvania State College, it was possible to present an exhibit which was considerably larger and apparently far more interesting than that which had been given during the fall of 1914. The Workmen's Compensation Law, going into effect on the first of the year,

has given an added interest to every thing which increases safety and accordingly greater interest was shown in the exhibit this fall, as was evidenced by many questions and inquiries.

The various fair associations which co-operated by giving the exhibit space in their buildings and the dates that the fairs were held are as follows:

Middletown Fair Association, Middletown, August 24th to 27th.

Warren County Agricultural Association, Warren, August 31st to September 3d.

Oil Creek Fair Association, Titusville, September 7th to 10th.

Mercer Central Agricultural Society, Mercer, September 14th to 17th.

Lehigh County Agricultural Society, Allentown, September 21st to 24th.

Milton Fair and Northumberland County Agricultural Association, Milton, September 28th to October 1st.

Bedford County Agricultural Society, Bedford, October 5th to 8th.

Perry County Agricultural Society, Newport, October 12th to 15th.

Greater Reading Fair, Reading, October 12th to 15th.

Vol. 2 No. 12

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

DECEMBER, 1915

HARRISBURG, PA.:
WM. STANLEY RAY, STATE PRINTER
1915.

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PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; James C. Cronin, Philadelphia; Otto T. Mallery, Philadelphia; John Price Jackson, Chairman, and William Lauder, Riddlesburg, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below: W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Francis Feehan, J. J. Coffey, and J. P. Quinn, Supervising Inspectors; district inspectors; etc.

The Division of Industrial Hygiene and Engineering consists of John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information, Paul N. Furman, is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.,

The Chief of the Bureau of Arbitration and Mediation is Patrick Gilday.

The Attorney of the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of S. S. Riddle, Editor.

POPULAR APPEALS TO SAFEGUARD WORKERS.

About one year ago the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry published two leaflets regarding accidents and disease in the factory. The first one was entitled "Timely Hints to Prevent Industrial Accidents and Disease." The demand for these leaflets soon exhausted the edition. Feeling that the publication of such literature has met a need for educational matter of this type, the Department has decided to republish these two leaflets and also a series of additional ones which will apply to workers in various trade processes or classes of industry.

Investigations throughout the State have revealed the fact that too many persons are not familiar with the dangers and hazards which pertain to their repsective classes of work. For instance, while painters may have heard of the disease "Lead Poisoning," yet they have not thought of it as having any connection with their work on account of the fact that they have not had its importance to themselves impressed upon them, either by contracting the disease themselves or seeing its symptoms in their fellow workers. The possibility, however, of this disease being contracted by anyone using paints shows the necessity for the hazards connected with the handling of this material being understood by all painters. When it is appreciated that the serious and far-reaching effects of this disease may be entirely eliminated by simple precautions, the present large number of cases in the painter's trade will automatically be reduced.

In many other trades, workmen are as unconsciously subjected, in the same degree, to the danger of accident or disease as are painters to lead poisoning. Many workmen in the course of their daily occupations perform their work in such a manner that they expose themselves or their fellow workmen to absolutely avoidable dangers. By far the greater number of the thirty-eight thousand accidents reported to the Department of Labor and Industry last year were caused by just such thoughtlessness as this.

Leaflets calling attention to some of these dangerous practices and conditions have been prepared. The suggestions contained in these leaflets have been drawn up in as condensed a form as possible in order that they may be readily understood by everyone. Those already published are submitted in the following pages. They are available for free distribution on application to the Department.

Leaflets covering other occupations and hazards are being prepared by the Division of Industrial Hygiene and Engineering and

will be issued from time to time and attention called to them in the pages of this Bulletin. Suggestions for topics which can profitably be treated in these leaflets are requested.

TIMELY HINTS TO EMPLOYER AND EMPLOYEE.

NO. 1.

Accidents and Diseases in the Factory.

FOR THE EMPLOYER.

Accidents and disease impair your workmen's efficiency and increase costs.

Usual routine is interrupted.

A "green" man is necessary or machines stand idle.

Production is lessened.

Quality is reduced.

Action for damages or compensation may result.

Protection to your employes against accidents and disease reduces costs and increases production, therefore

GUARD:

Machinery and dangerous places.

PROVIDE:

Proper drinking water,

Good ventilation,

Sanitary toilets,

Proper light.

Then you will have the increased efficiency, loyalty and co-operation of your employes.

FOR THE EMPLOYE.

Breathing dusts continually leads to consumption and lung troubles.

The exhaust system provided for dust creating machinery should be used and maintained in operating condition

Impure air lowers your vitality.

Properly regulate and maintain all means used for ventilation and keep toilets in sanitary condition.

Unguarded machinery and dangerous places may mean loss of life and limb.

Guards are installed for your protection.

See that proper use is made of them, not only by yourself but by others.

Accidents and disease mean

Loss of income,
Increase of expense,
Possible total or partial disability,
Impaired health,
Worry,
Untold suffering.

Co-operate and promote all means used for your protection.

Do all in your power to assist in preventing any abuse of that which has been provided for your safety and comfort.

TIMELY HINTS NO. 2.

TO PREVENT INDUSTRIAL ACCIDENTS AND DISEASE.

FATHERS:

Be cautious in your work. Remember the dependent family at home.

MOTHERS:

Caution the working members of your family to be careful.

SISTERS AND DAUGHTERS:

Urge your brothers and fathers to do everything in the safe way.

YOUNG MEN:

Careless methods used now may mean total or partial disability to you the rest of your life.

WOMEN WAGE EARNERS:

Dress so as to avoid being caught in machinery. Wear head coverings if there is any possibility of hair being caught in moving parts.

Preserve your health by every means available.

BOYS AND GIRLS:

Learn to do things now in a safe way.

It will be valuable to you as you grow older.

DO YOU KNOW

More than 2 persons are killed
and 125 persons are injured

EVERY DAY IN PENNSYLVANIA.

50 per cent of these accidents are avoidable.

Are YOU doing your work in a safe way?

IT PAYS.

STOP! LOOK! LISTEN!

BE CAREFUL! BE CAUTIOUS!

TIMELY HINTS NO. 3.

FOR ELEVATOR OPERATORS.

It is not Lawful for any Person Under 18 Years of Age to Operate an Elevator.

TO ALL OPERATORS:

Your life and that of others is dependent on your alertness, caution and good judgment.

You cannot run an elevator properly and safely and do something else at the same time.

If elevator appears not to be working properly, do not attempt to run it. Notify management.

Frequently satisfy yourself that cables and mechanism are in safe condition.

TO ALL OPERATORS OF PASSENGER ELEVATORS:

Close all gates before starting car.

Keep people back from front of car when there is no inside gate.

Do not allow people to interfere with control handle.

Your car should not be overloaded beyond allowed number of persons.

TO ALL OPERATORS OF FREIGHT ELEVATORS:

Distribute load equally.

See that nothing projects into shaftway.

Bring car floor level with landing floor.

Lock elevator before loading or unloading.

Gates should always be closed when elevator is not in use.

Horse play is inexcusable on or near elevators.

Loads on wheels should be blocked to prevent shifting.

ALL THE SUGGESTIONS IN THE WORLD WILL NOT PREVENT ACCIDENTS UNLESS YOU ARE CAREFUL.

90% of ELEVATOR ACCIDENTS occur at Landings and are due to CARELESSNESS.

BE CAREFUL AT LANDINGS.

TIMELY HINTS NO. 4.

FOR STEAM BOILER FIREMEN AND ATTENDANTS.

All Steam Boilers must be Inspected and Approved at Least Once a Year by an Approved Boiler Inspector. Certificate of Approval Must be on File at Plant and Copy Sent to Department of Labor & Industry.

An improperly operated Boiler is as dangerous as dynamite.

Continual watchfulness and care are required of every fireman.

Know working pressure allowed for each Boiler by the Inspection Certificate. Never exceed this pressure.

Keep water level constant by feeding water in small quantities at regular intervals.

In case of low water and hot fire, do not draw the fire with a hoe. If it cannot be dumped into the ash pit, cover it with ashes or coal. Stirring up the fire increases the heat given off. Allow Boiler to cool down before starting pump or injector.

Blow-off and all other valves should be opened and closed slowly.

Scale in Boilers causes bulges in and ruptures of Boiler shell—eventually leading to explosions. Remove it by frequent cleaning.

The safety valve is your life preserver. Test it every day to see that it is working properly.

Clean water glasses and pressure gauges are necessary. Never operate a Boiler with defective pressure gauge.

Before entering any Boiler, notify some responsible person of your intention; lock all valves leading to the Boiler with padlocks and keep the keys in your pocket until you have finished work in your Boiler.

If a leak is detected, notify management.

On a cold Boiler, start firing slowly.

At the beginning and end of each turn, test safety valves and water gauges and see that water is at proper level.

A careful fireman plus a clean Boiler-room equals safe operation.

Your own Personal Safety and That of Your Fellow Workmen in Your Vicinity Depends on Your Care and Vigilance.

YOU HAVE A DOUBLE RESPONSIBILITY.

BOILER EXPLOSIONS HAVE BEEN CAUSED BY:

BLOCKED SAFETY VALVES

CORRODED PLATES

SCALE

LOW WATER

RAPID OPENING OF LARGE STEAM VALVES

DISREGARD OF INSPECTOR'S RECOMMENDATIONS

EXCEEDING ALLOWED PRESSURE

Last year, in the United States, there were 467 Boiler explosions which killed 148 and injured 315 persons.

TIMELY HINTS NO. 5.

FOR EMPLOYEES IN MERCANTILE ESTABLISHMENTS.

Your Health is Your Greatest Asset, Protect It By:

PLENTY OF FRESH AIR—Without it you feel dull and languid and become more susceptible to colds; if you can't regulate the ventilating system yourself, demand that it be regulated by those in charge.

PROPER REST—Constant work wears out the body. Well placed and well used rest periods rebuild the system. Use the time you are off duty for rest or exercise.

REST PLACES—Take your rest in the open air or in well kept rest rooms. Well kept means well ventilated, clean and tidy. See that you use such places as you use your own home, insist on your neighbor doing likewise.

TOILET ROOMS—Unclean toilet rooms spread disease. Do not allow your health to be endangered thereby.

BE PROMPT—Your tardiness imposes extra work on a fellow employee. It disorganizes the system of the establishment.

BE COURTEOUS—You will have contented customers and both you and your employer will be benefited.

BE NEAT—Orderly arrangement of stock and clean and tidy personal appearance please your patrons and add to your own self respect.

ESCAPE FROM FIRE—Know the location of all fire exits. These must be kept unobstructed. You are the one whose life will be saved by knowing how to use them. Get this information now. It will be too late when the fire has started.

CO-OPERATION BETWEEN EMPLOYER AND EMPLOYEE MEANS SUCCESS FOR BOTH.

TIMELY HINTS NO. 6.

FOR PAINTERS.

LEAD.

Every person working with lead paint is in danger of contracting lead poisoning.

The symptoms of mild lead poisoning are:

Colic.
Constipation.
Blue line along the tooth margin of the gums.
Foul breath.
Loss of strength in wrists or hands.
Loss of appetite, especially for breakfast.

Continuing at work after the onset of these symptoms is apt to produce:

Complete paralysis of arms and legs.
Disease of the heart, blood vessels and kidneys.
Premature old age.
Insanity.
Death.

Lead enters the system most frequently as dust. The more dry sandpapering there is the more dust there will be. Most of it is absorbed from the stomach but some also from the lungs and skin. Dust is carried to the stomach through the mouth by:

Unwashed hands.
Hands which after being washed have touched dirty clothes, or taken dusty wrappings from lunches.
Food exposed in the workroom or carried in the pockets of the workers.
Food touching lips that have not been thoroughly washed. Beards and mustaches increase this danger as they catch the lead dust readily, are hard to keep clean and are almost sure to touch the food as it passes into the mouth.

Prevent lead poisoning by:

Moist sandpapering whenever possible.
Using respirator if dry sandpapering must be done.
Washing hands and face thoroughly before eating.

OTHER POISONS.

Quick drying paints often contain wood alcohol, benzine, turpentine, or other substances which give off poisonous fumes while dry-

ing. These are frequently sold under fancy trade names so that their injurious nature is not easly recognized.

Breathing of the fumes may produce:

Headache.
Dizziness.
Nausea.
Faintness.

Longer exposure to these fumes, especially in closed rooms, brings on more severe symptoms, which vary with the substance used as the drier, but may be:

Blindness.
Paralysis.
Unconsciousness.
Death.

When using quick drying paints, see that the room is well ventilated so that the fumes may be carried away.

PAINT REMOVING.

Poisoning from lead and from dangerous fumes is as common in paint removing as in painting.

Paint removing by the dry method—sand papering, chipping or burning—scatters lead dust through the air. This settles on the workman, his clothes or the floor, and from these places is carried into the body just as in painting.

Liquid paint remover gives off irritating and usually poisonous fumes which affect the person using it in the same way that quick drying paints do.

Personal cleanliness and free ventilation are the workman's protection in both these processes.

Chewing tobacco *does not* prevent lead poisoning as many painters claim. It gives the lead three separate ways of getting into the mouth —from dust settling on the tobacco in the pocket, from the fingers in handling the tobacco, and from the lips over which it passes.

If at any time you do not feel well, or notice any of the symptoms mentioned in this folder, see a physician *at once,* and be sure to tell him you are a painter. It will help in his treatment of your case.

Every case of lead poisoning has back of it either ignorance or carelessness. Can you afford to become an invalid from either of these causes?

Of sixty persons who died from lead poisoning within two years, thirty-seven were painters.

TIMELY HINTS NO. 7.

FOR PRINTERS.

Lengthen Your Life by Guarding Your Health. Learn the Dangers of Your Trade and Then Avoid Them.

POISONS IN PRINTING.

Lead, the main constituent of type metal, is absorbed into the system chiefly from the stomach and in small part from the lungs and possibly from the skin. The dust of the workroom always contains lead in very finely divided form. Unless very great precautions are taken this settles on the floor, the hands or the lips and is in this way carried to the stomach.

Taken into the body, it produces:

Colic.
Constipation.
Paralysis.
Disease of the heart, blood vessels and kidneys.
Insanity.
Death.

Protect yourself from it in every way:

Do not splash metal from your melting pots; it dries, becomes dust and you inhale the lead.

Never hold type in your mouth.

Do not permit dry sweeping of your workroom, or dusting of the fonts while you are present. The only safe way of cleaning during working hours is vacuum cleaning.

Do not keep your lunch exposed to the dust of the workroom.

Never touch food or place your fingers in your mouth without first washing your hands thoroughly. A nail file or other instrument for cleaning the nails, a brush, hot water and soap are necessary if the lead is to be removed thoroughly.

Benzine is often used to clean the ink from the rolls of the printing presses. Poisoning from this substance produces:

Faintness.
Dizziness.
Headache.
Vomiting.

This material should be used only in places that are well ventilated.

Aniline Oil forms a part of some of the mixtures used in cleaning rolls. It is more poisonous than benzine and in addition to the symptoms given under Benzine may, in severe cases cause:

Convulsions.
Death.

Find out whether or not the cleaning mixture contains aniline oil. If it does, use it only in well ventilated rooms. Do not splash any of it on your body, your clothes, or the floor. You may be poisoned by absorbing it through the skin, or by breathing the fumes as the liquid evaporates.

Poisonous Gases are given off by *all* fires. In addition most *gas* fires do not burn up all the gas but allow some of it to escape into the room. See that all fires have flues in good working order, leading to the outside air, in order to carry away any gases that might injure your health.

TUBERCULOSIS.

Of every 1,000 deaths among printers 292 are caused by tuberculosis. To have this disease you must take the germ into your body. You may get it from the common drinking cup, the common towel, or from your coughing neighbor who spits on the floor. If your employer does not provide individual cups and towels, provide your own. Your health is worth it. Plenty of cuspidors conveniently placed and in a clean shop ought to prevent everybody from spitting on the floor.

INACTIVITY.

Long sitting or standing in one position, especially in rooms without plenty of fresh air, causes poor circulation of the blood. Overcome this by plenty of exercise in the open air after working hours.

LIGHT.

If you can't have daylight for your work, endeavor to have all artificial lights properly placed and shaded so as to keep the glare from your eyes. You need the best light possible to do your work quickly and well. A printer with eyesight ruined is a printer out of a job.

DEATH FROM TUBERCULOSIS OR LEAD POISONING IS ABSOLUTELY UNNECESSARY. IF YOU CONTRACT EITHER OF THESE DISEASES SEE YOUR PHYSICIAN *AT ONCE.* BOTH ARE CURABLE IF TREATMENT IS BEGUN EARLY AND CAREFULLY CARRIED OUT.

STATE-WIDE EFFORTS TO PREVENT FATALITIES AND PROPERTY LOSS BY FIRES.

Inspectors of the State Department of Labor and Industry have been ordered to take drastic action to prevent the blocking and ob-

structing of fire escapes on factories, tenement houses and public halls.

Inspectors throughout the State have been directed to arrest and prosecute, without delay, persons responsible for blocking exits to fire escapes or for placing obstructions of any kind on steps or landings of fire escapes.

The laws forbidding the blocking of aisles in factories and public halls and the laws requiring fire drills in factories are to be rigidly enforced. Installation of automatic sprinklers and automatic fire alarm systems are advocated by Commissioner Jackson for factories, hotels and other public buildings.

As appeal is made by Commissioner Jackson to every factory employe, occupant of a tenement house, patron of public hall or private citizen to notify the Department of Labor and Industry by letter or in person where a fire escape is blocked or similar laws are violated.

The necessity of protecting with fire-proof material exterior fire escapes where they pass doors or windows is pointed out by the Commissioner. He explains that a fire escape, even though properly constructed, may be useless as a means of escape in time of fire if tongues of flame can shoot from open doors and unprotected windows to prevent safe passage of persons from upper floors.

The recent fire in a Pittsburgh factory, where twelve girls and one man were killed and the fire in Brooklyn, where thirteen girls lost their lives, are cited by Commissioner Jackson as reasons for the adoption of every precaution to protect human lives and especially the lives of women workers in factories.

"While it is true that automatic sprinklers are manufactured by private concerns for profit, their installation in factories and public buildings is more than a commercial proposition. It is a matter of saving lives and property," Commissioner Jackson has stated.

"A comparatively small blaze in a factory is sufficient to melt the fuse attachment of an automatic sprinkling system and the subsequent action of the sprinkler will in most cases prevent conflagrations, keep down the smoke and will prevent the clothing of women workers in factories from getting on fire. Similarly the heat from a small fire in a factory will start in operation the automatic fire alarm system and will bring the firemen and fire fighting apparatus to the burning building without delay.

"The expense of installing sprinkler systems is offset by the reductions which follow in fire insurance cost. The owner of a structure, equipped with automatic sprinklers, saves ultimately by the reduction of his insurance premium. I even understand that some sprinkling concerns will install systems in factories and will take in payment the savings effected in fire insurance cost over a term of years.

"There is, however, no excuse for blocked fire escapes. If a fire escape is to be blocked it might better never have been erected for all the good it will do in time of fire. The inspectors of this department are instructed to make every effort to eliminate such unnecessary hazard.

"It is especially unfortunate that an unthinking proprietor of an establishment may pile packing cases before a fire escape exit or otherwise block the fire escape without the knowledge of an inspector and perhaps even within an hour after the inspector has been there and approved conditions as he found them in that establishment.

"In the same way occupants of tenement houses may pile mattresses, other bed clothing, or even put furniture on fire escape landings during cleaning hours in the morning and the violation may escape the attention of an inspector although a fire occuring during that time would probably result in fatalities.

"These are the reasons why the Department of Labor and Industry must have the cooperation of the workers in all factories as well as the cooperation of the general public in discovering blocked fire escapes, or fire escapes which fail to fulfill the purpose for which they were constructed.

"Every citizen is urged to write or call upon this department giving detailed information of dangerous conditions that in time of fire or panic might cause a loss of lives."

SLOGANS FOR SAFETY.

"GOOD MORNING! MAKE UP YOUR MIND TO PLAY SAFE TODAY!"

That is the greeting which the Midvale Steel Company, of Philadelphia gives to its employes as they enter the various gates to the works of the plant. The words appear on signs that swing above every entrance.

Another placard sets forth the suggestion that:—

"SAFETY SHOULD INTEREST THE WORKMEN MORE THAN THE MANAGEMENT."

The Midvale Company, through its Safety Committee, makes extensive use of placards and signs in the interest of "Safety First" in all sections of its plant as is a custom followed by many large manufacturing concerns.

Every appeal for Safety made by the Midvale management through this "Sign Language" is worded in a manner not only intelligible to the workman but also capable of arousing his interest.

Some of the slogans for safety are original with the Midvale Company others have been borrowed. There is, however, a human appeal and human touch in virtually every one of the printed quotations that encourage the workers to carefulness in every section of this big plant.

A collection of the texts of these signs has been made by the Midvale Company and includes the following suggestions for the workers in the hazardous processes of producing finished steel products.

SAFETY FIRST.

Is an appeal to every employe, whatever may be his occupation.

FOREMEN.

Don't forget that educating the men under you is the best safeguard.

REMEMBER.

All the safeguards that we can devise and install will not prevent you from doing foolish things.

SAFETY FIRST.

Co-operation is the key note.

SAFETY FIRST.

Better to lose a minute to make sure, than lose a week with an injury.

When we all work together for Safety, accidents will be very scarce.

There is a safe way to do everything; do it that way.

Are you giving Safety your first thought. If Not, Why Not?

Careful men are usually efficient; careless men are not.

Safety devices will not prevent accidents unless used. Use them.

Defective tools are dangerous; turn them in to the tool room.

The effort for Safety is for your benefit.

Looking out for the other fellow makes it safe for everyone.

All accidents have causes; remove the causes.

Forget that common fallacy that we must have accidents when busy; do your part and they won't happen.

Resolved: Not to take any chance this day.

Individuality counts as well as team work in Accident Prevention.

We want your help to prevent accidents—This means *you.*

Don't rely on the other fellow when it is a question of SAFETY.

SAFETY—Eventually; why not now?

Think of yourself and the doctor won't have to think of you.

Everyone makes mistakes, some more than others; the efficient man never makes the same mistake twice This rule applies to SAFETY.

Intelligence, caution and carefulness help you in every endeavor.

Personal caution is the means of preventing accidents.

The best safety device known is the careful man.

Preach Safety First, and practice what you preach.

The eye is one of the most valuable organs in the human body. Protect your eyes by wearing goggles.

Your family, your fellow workers and your department are depending on you to avoid accidents.

Constant vigilance is the price of safety.

Habits of care and watchfulness are the best safeguards.

Remember the rule: "When in doubt, take the safe course."

The study of safety is the study of the right way to do things.

The Suggestion Box is open to all; submit your ideas.

Enlist in the Safety movement; every man is needed.

Prevent accidents and promote sanitation, then everybody will benefit.

Accidents are waste; if for no other reason than economy, they must discontinue.

Your eyes are your biggest asset; are you protecting them with goggles.

"First aid to the injured" means nothing to you if you are careful.

Accidents are unnecessary; we don't need them, do you?

Every accident that happens here or elsewhere should be a lesson to you.

Let us all profit by past experience and stop *ALL* accidents.

Small neglects lead to serious accidents.

Defective shoes cause many serious accidents. Keep your shoes in good repair.

Good Morning; don't forget the safety rules today.

Safety affords security from injury; therefore, be safe.

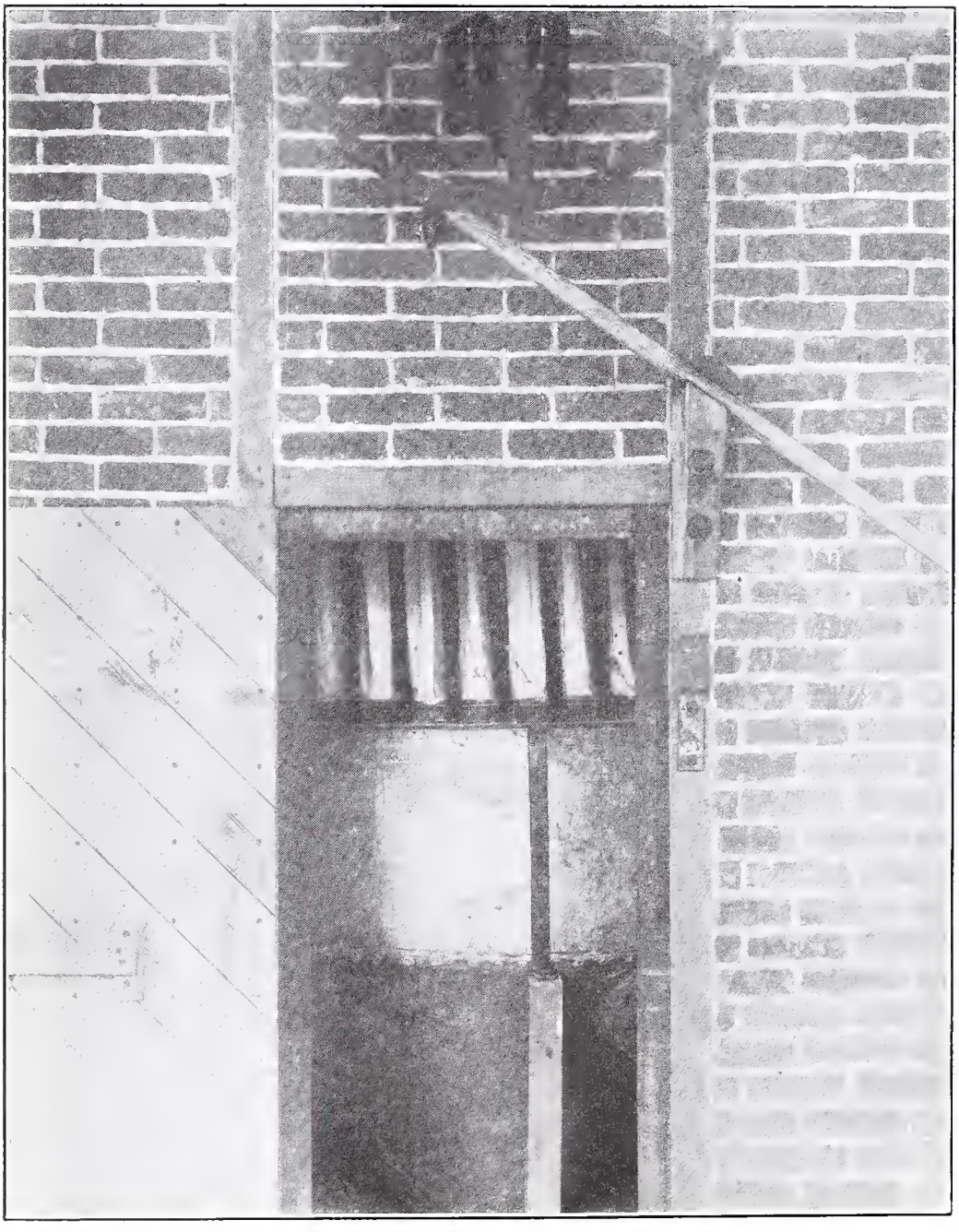
The chance-taker is a menace to himself and fellow-employees.

Caution the careless man; if he repeats, better tell the Safety Committee for your own protection.

Safety means freedom from danger, injury or damage.

Personal caution is the greatest of all safeguards.

The world reserves its best prizes for initiative in doing the right thing without being told.



ENCLOSED DUST HOUSE AND SHAKER.

PROTECTING WORKERS FROM POISONOUS DUST.

The accompanying illustration shows the method employed by Harrison Brothers & Company, Philadelphia, for enclosing their dust collector. This company manufacturers a variety of lead products, from which great quantities of poisonous dust are given off in the various processes. In order to remove the dust from the work rooms an effective exhaust system is maintained throughout the plant. The dust from this system is collected in an "Organ pipe" collector.

The features which make this installation particularly of note are:

The complete enclosure of the collector in a brick stack, and

The method of shaking down the tubes from the outside of the enclosure.

Poisonous lead dusts are thus collected without contaminating the work rooms in the neighborhood of the collector, and normally, without the necessity of any workman being exposed to these dusts.

The attention of manufacturers in other lines of work involving dusty processes is called to this installation. It is believed that the enclosure of this class of collectors would be very desirable regardless of whether or not a poisonous dust is being handled.

SELF OILING BEARINGS AS FACTORS FOR SAFETY.

The Industrial Board of the Department of Labor and Industry has in its safety standards of power transmission machinery recommended an effective system of self oiling for all bearings, and has forbidden the oiling of shafting by hand while it is in operation.

The object of the Industrial Board is to discourage as far as possible the dangerous practice of having an oiler go over the shafting at frequent intervals. Shafting is nearly always located overhead so that the bearings must be reached from either a platform or ladder. They are frequently in dark and inaccessible positions so that the oiler cannot properly gauge the danger to which he is subjected. In many cases a slip on the part of the oiler himself or his ladder will throw him against a nearby pulley or upon the revolving shaft. The result is almost certain death. Loose clothing may be caught up with equally fatal results.

Self oiling bearings, if properly installed, need but infrequent attention, and can be taken care of at the convenience of the management when the shafting is shut down for other reasons. They therefore remove this hazard absolutely.

From the operating standpoint as distinct from the distinctly safety view self oiling bearings are an advantage. While the first cost is somewhat greater, lessened maintenance in the decreased oil consumption and attendance usually more than offset this feature, and a saving is effected.

The Industrial Board regulations on this point are in line with both safe and economical operation and should receive the careful attention of all factory managers.

KEEP THE WASH ROOMS CLEAN.

Complaints have reached this Department from time to time from manufacturers who claim that after they have installed sanitary appliances, the employees make no effort to take care of these appliances or the rooms in which they are located. In some instances, complaints were to the effect that these rooms and appliances were subjected to abuse and maltreatment.

It has been found, in some cases, that this complaint is a just one but in other cases, it is found that no attention is given by the management to keeping these places clean and in a sanitary condition.

Naturally in any large body of persons there are always a few who have no regard for the rights and welfare of other people but simply think only of themselves and make no pretense of taking care of any property which is not their own. For such persons summary discipline is the only remedy but it is believed that thoughtless or careless people can be reached in other ways.

With an idea of trying to reach the thoughtless the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry has prepared a card of convenient size which can be placed in all wash rooms and toilet rooms. These can be obtained free in any quantity by addressing the Department at Harrisburg.

The material which appears on the card is as follows:

These conveniences have been installed for your use, not for your abuse.

Use basins freely but leave them empty and clean.

Flush toilets thoroughly after using.

Never throw rubbish into toilets. Put it in the places provided for that purpose.

With proper use, plumbing takes care of itself.

Careless use of these conveniences causes you discomfort and endangers your health.

Do not allow the indifference of yourself or others to menace your health. Report any misuse of these accommodations to the proper authority at once.

THE STATE BUREAU OF EMPLOYMENT.

For a long time people have begun to consider that finding jobs for the unemployed was a privilege rather than a means of exploitation of the defenseless laborer but this feeling had not become a sufficiently strong sentiment to manifest itself in any effective protest until the legislature of June 1915, passed the Bill creating a State Bureau of Employment in the Department of Labor and Industry. Up to this time, in the State of Pennsylvania, the finding of employment for the people of this State, has been left entirely to the unsupervised individual private agents, who, in a great majority of cases do this work chiefly with the thought of earning a comfortable income rather than considering the welfare of the persons applying to them for assistance. Before the year 1907, so many private agents came before public attention in one large city on account of the numbers of frauds perpetrated by them, that a group of women organized an association for the investigating of the conditions in the private agents' offices. Mainly through this activity, a bill was passed in the 1907 legislature, giving cities of the first and second class the right to inspect and regulate the work of the private agents.

This law, however, did not state that these cities *must* provide for this inspection but that they might if they cared to, so that only Philadelphia, Pittsburgh and Scranton attempted any such work. Philadelphia, last year, had on its list of licensed agents, nearly two hundred; Pittsburgh had on its list, about one hundred, Scranton went to the extent of licensing two agents. The agents throughout the State number four to five hundred at the present time and up to the passage of the Act of 1915, except for those mentioned in the three cities above, have had no regulations whatever. By the Act of 1915, the licensing of private employment agents throughout the State, was given entirely to the control of the State Bureau of Employment. By this Act, the whole duty was removed from the cities and given entirely into State control.

The private agents according to the old law and old method of working, charged a registration fee to all applicants applying to them for positions. This means the receipt of a great many dollars daily for which, in most cases, there was no guarantee of any effort to be made

to assist the applicants in obtaining positions and in the majority of cases it is very possible that no effort was made. Under this new law, no registration fee is allowed to be charged and a rule has been made that until an applicant is actually given an employer's name and address and the information concerning the position he offers and is actually started on the way to interview the employer, then, only, (if at any time), is the agent allowed to charge an advance fee for his services. If the applicant fails, through no fault, of his own, to secure the position, his money must be returned in full on demand.

The Bureau has been asked by these agents to give them set forms of contracts and schedules of fees to be charged, but since it has, at any time, the power to make rules guiding the methods of the agents, it has not at the present time attempted to have them all use uniform contracts and schedules but have merely criticised their old forms, eliminating from them anything that would be contrary to the law as regards the registration fee.

Besides the duty of regulating the work of the private agents, this Bureau also has the work of organizing a system of fee employment offices in cities throughout the State of Pennsylvania, the clearing house of which is located at Harrisburg. Up to the present time, the District Offices that have been organized are in Harrisburg, Philadelphia and Johnstown. Pittsburgh, Scranton and Allentown will be organized in the near future. It is expected that the District offices will conduct the filling of orders and applications for employment within certain stipulated districts, while the Clearing House at Harrisburg will receive all orders and applications which the District Offices are unable to fill. The Clearing House will then take upon itself the work of filling these positions and orders by communication with the various districts. In this way, an extended knowledge of the labor conditions will be obtained and the possibilities of finding suitable employment for the working man and the proper sort of employes for our industries will be greatly enlarged.

By means of the Daily Reports of the District Offices which are sent to the Clearing House at Harrisburg, as well as through the Weekly Reports which the Private Employment Agents are required to send to the Bureau, it is expected that a fairly accurate statistical report of the labor market will be obtained.

The Bureau is soliciting the co-operation of all those doing employment work of any kind, in the operation of its District Offices and it is depending upon the co-operation of private organizations for the carrying on of its great work. As the Bureau at the present time is limited as to the number of its employes, it is only by co-operating with local organizations that it can hope to obtain the results it strives for. The Bureau is also encouraging the sending of reports to the main office at Harrisburg, of all the work done by the Employment

Bureaus of Charitable Organizations, Manufacturer's Associations, Schools and Vocational Guidance Bureaus. It will furnish free, on request, to all such co-operating agencies, all the blank forms and schedules with which to make such reports.

It is hoped that the manufacturers of the State will co-operate with this Bureau by sending it as many orders as they are able, and that they will learn by experience from the results obtained that the Bureau means business. All applicants sent to them can be relied upon as having suitable credentials as their records are looked up before they are referred to an employer. Any applicant for a position in any of our industries, who carries a card from this Bureau, should be at once considered a person deserving of attention.

Up to this time, although actually in operation only for a period of about one month the Harrisburg District alone has received hundreds of applications for positions and also scores of employer's orders. There is a much greater demand for unskilled workmen and yet, a number of applications have come for high class men with technical and professional training. It is interesting to note, however, especially in the Harrisburg District, how many applicants for positions wish indoor work and chiefly clerical work for which the blanks they fill out prove them decidedly unfit. The application for this kind of position are usually conspicuously misspelled and poorly worded. It is hoped that such applicants can be guided to choose work more suitable to their training.

One of the difficulties which this Bureau has to contend with at the present time is the carelessness of some of its applicants in not reporting to employers to whom they are sent, or sometimes reporting to employers, obtaining positions, but then not letting this Bureau know of their success. It is hoped that in time applicants for positions will learn to be grateful enough for the free service given them, to do their share in carefully reporting the result of the efforts of this Bureau in their behalf.

The following are some of the openings offered:

Stove mounters, planers, lathers, borers, fitters, floor hands, operators on shirts, glass makers, lumber handlers, structural iron workers, brick makers, quarrymen, coal miners, chain makers, cigar makers machinists of all kinds, weavers, warpers, loom fixers, butchers, instrument makers, office clerks, solicitors, canners, blacksmiths and gold leaf beaters.

The application for positions in the Harrisburg District range from that of Sales Manager at $7,500 down to that of House Work Girl at $3.00 per week. These applications show great variety. On the list are mechanics, night-watchman, salesmen, teamsters, grocerymen, clerks, farm hands, painters, brick layers, carpenters and day laborers.

It is hoped that the Bureau has now started on a useful career and that its first year may see great results in the finding of positions for the unemployed and in supplying employers with the right men for the right jobs, and also that the work of the Private Employment Agents will become more systematic and that they will become more careful in the management of their offices.

NEW FORM OF ACCIDENT REPORTS.

The organization of the Pennsylvania Department of Labor and Industry, made necessary many new forms and methods in the collection of statistics.

One of the important features of the responsibility placed upon the Bureau of Statistics and Information, of the Department, was the collection and compilation of statistics on accidents happening throughout the State. The original form of accident blank used by the Bureau was in three parts; the first part being made immediately after the accident, followed by parts two and three, as the data became available.

During the year 1913, a new and much more desirable form of report was adopted by the National Committee on Standardization of Forms, in the adoption of which the Bureau of Statistics and Information took an active part, and through its Chief, was instrumental in securing the adoption of the new form used during the year 1915. That form is also used by other States making it possible for the general government to compile accident statistics, covering all the territory under its jurisdiction.

The enforcement of the Workmen's Compensation Act, which is effective on January 1, 1916, makes necessary a new form of report to cover data required by the Workmen's Compensation Board.

All the matter and data covered by the report used in 1915 was incorporated in the new blank, for use in the year 1916, and to comply with the requirements of the Workmen's Compensation Board, a few new questions were added. The form was changed in one particular, that being in the supplementary report attached, and enabling a completion of the original report where the accident covers a period of more than thirty days.

This new form to be used in the year 1916, will be in duplicate, one copy to be sent to the Department of Labor and Industry, the other to be sent to the Insurance Carrier.

Copies of these forms follow, and a careful study will demonstrate the desire of the Department to lighten the burdens of those whose duty it is to make reports of this nature.

County..... Class..... Code..... Plant No.....
A..... C.....

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY

BUREAU OF STATISTICS AND INFORMATION

HARRISBURG, PA.

(IF POSSIBLE FILL IN THIS REPORT ON TYPEWRITER, IF NOT WRITE PLAINLY.)

This blank should be returned to the Bureau of Statistics and Information, Harrisburg, Pa., as soon as filled out. The duplicate blank attached should be sent to your insurance carrier. Return to be made within 48 hours after accident occurs. As far as possible an answer should be made to every question.

EMPLOYER'S REPORT OF ACCIDENT TO EMPLOYE.

1. Name of employer, ...
   City or town, ...
2. Office Address: Street and No.....
3. Nature of business, ...
4. Location of Plant where accident occurred: Street and No. .....
   City or Town, ...
5. If accident occurred away from plant, state where, ...
6. Date of Accident.....7. Day of Week.....8. Hour of Day.....
9. Hour injured person began work that day, ...
10. Working hours per day.....11. Working hours per week.....
12. Name of Superintendent or person in charge at time of accident.....
13. Name of injured employe .....
    Home address .....
14. Sex.....15. Age.....16. Speak English?.....17.
    Nationality and race.....
18. Single, married or widowed.....19. No. of children under 16 years.....
20. Physical defect: Eye, Ear or otherwise.....
21. Has Employe reserved his common law rights?.....If so, when?.....
22. Wages or average earnings weekly?.....23. Piece or time worker?.....
24. Engaged in what work when injured.....
25. In what department or branch of work.....
26. Was this the regular occupation of employe?.....
27. If not, state regular occupation.....

28. Name of machine, tool or appliance in connection with which accident occured .....
29. Hand feed or mechanical?.....
30. By what kind of power driven?.....
31. Part of machine on which accident occurred.....
32. Length of experience at machine or operation.....
33. Describe in full how accident occurred, stating cause clearly.....
.....
.....
.....
34. Was a safeguard in use at the time of the accident?.....
35. Is it possible to provide a guard, or safety appliance that might have prevented the accident? .....
36. Was the machine, tool or appliance out of order or ill suited for the work?.....
37. Were special instructions given to the injured person in relation to its use?.....
38. Names and addresses of witnesses.....
.....
.....
39. Nature of injury, as definitely as possible.....
40. Part of person injured. (State whether right or left).....
41. Attending physician or hospital, name and address.....
42. State your estimate of probable disability.....
43. If injury resulted in death, give date.....
44. Name of insurance carrier.....

Date of Report.....Made out by.....

If employe is disabled detach here sending in supplemental report upon return to work, or, in any event, at the end of 30 days.

If employe is NOT disabled, or if death resulted, fill in, but do not detach.

SUPPLEMENTAL REPORT OF AN ACCIDENT TO AN EMPLOYE.

1. Date of previous report.....
2. Name of Employer.....
3. Office address: Street and No.....
   City or Town.....
4. Name of injured employe.....
5. Present address of employe: Street and No.....
   City or Town.....
6. Has injured person returned to work?.....Date of return.....
7. Number of days lost.....
8. At what occupation.....
9. Present rate of wages per week?.....
10. If injured person has not yet returned, state estimate of further disability....
.....

Date of Report.....Made out by.....

NEW PRODUCTION REPORT.

With a desire to perfect a more complete production report for the year 1915 and also to facilitate the making of reports of this nature, both to the State and to the General Government, the Bureau of Statistics and information have prepared a new and more easily understood blank than was used for the year 1914.

This report will carry practically the same information as the form which it supersedes, but is less complicated.

The new feature for reports covering the year 1915, includes a table covering the classified weekly rates of wages. This part of the report is made for the one week of the year in which the greatest number of persons were employed, and when compilation shall have been completed it will show the average wages paid in the manufacture of the various products covered by the reports for the whole State, and also the average number of wage earners employed each month in the year.

Material contained in these reports is regarded by the Department as confidential, and is not used for purposes of taxation. Compilations from the reports are published in the aggregate only, and not by individual, co-partnership, or corporation classification.

THE WORKMEN'S COMPENSATION BUREAU.

Referees have been assigned to the compensation districts as follows:

W. B. Scott, 606 W. Lehigh Avenue, Philadelphia, and *G. C. Klauder,* Bala, Pa., to District No. 1, including Philadelphia, Delaware, Chester, Montgomery, and Bucks Counties. Headquarters, Philadelphia Pa.

Paul Houck, Pottsville, Pa., assigned to District No. 2, including Berks, Schuylkill, Lehigh, Northampton and Carbon Counties. Headquarters, Pottsville, Pa.

G. W. Beemer, Clark Summit, Pa., assigned to District No. 3, including Montour, Columbia, Luzerne, Monroe, Pike, Wayne, Lackawanna, Susquehanna and Wyoming Counties. Headquarters, Scranton, Pa.

E. K. Saylor, Lancaster, Pa., assigned to District No. 4, including Dauphin, Lebanon, Lancaster, York, Adams counties. Headquarters, Lancaster Pa.

W. W. Champion, Montoursville, Pa., assigned to District No. 5, including Tioga, Lycoming, Bradford, Sullivan, Union, Snyder, Potter, Northumberland, Centre, Clearfield, Clinton and Cameron counties. Headquarters, Williamsport, Pa.

Jacob Snyder, Roaring Springs, Pa., assigned to District No. 6, including Cambria, Blair, Huntingdon, Mifflin, Juniata, Fulton, Bedford, Somerset Counties. Headquarters, Altoona, Pa.

Charles H. Young Newcastle, Pa., assigned to District No. 7, including Erie, Warren, McKean, Elk, Forrest, Venango, Mercer and Crawford Counties. Headquarters, Erie, Pa.

L. E. Christley, Butler, Pa., and *Thomas J. Dunn,* Pittsburgh, Pa., to District No. 8, including Lawrence, Butler, Clarion, Jefferson, Indiana, Armstrong, Westmoreland, Fayette, Greene, Washington, Beaver and Allegheny Counties. Headquarters, Pittsburgh, Pa.

RULINGS OF THE STATE WORKMEN'S COMPENSATION BOARD.

Rulings made by the State Workmen's Compensation Board since the publication of the November Bulletin, are as follows:

> "A non-resident alien woman claiming as a dependent widow, may prove her marriage by a state record of the civil marriage or the church record of a religious marriage."

* * *

"In all cases in which applications for exemption from carrying insurance are made, the applicants will be required to answer the following questions:

> 1. Will it be your policy to discriminate against an employe with a large family in favor of an unmarried employe or an employe with a small family?
> 2. Will you discriminate against an American in favor of an alien employe?
> 3. Will you discriminate against a man on account of his age when he is otherwise well qualified?"

* * *

"The notice required by Section 302-(a) notifying the employe of the employer's refusal to accept Article III, shall be personally served upon each employe by furnishing him with a copy of same, and informing him of its contents in a language understood by him."

"No certified copy of any agreement or claim petition will be issued for the purpose of filing a lien as provided for in Section 429 of the Workmen's Compensation Act of 1915 where the employer is insured in the State Fund and has given notice of an accident within seven days after its occurrence."

UNDERWRITING COMPENSATION INSURANCE.

Underwriting of compensation insurance, covering the liability of employers, subject to the Workmen's Compensation Act of 1915, began in all sections of the State December 13th. This state-wide activity in liability insurance followed the announcement by the State Workmen's Insurance Board of the rates as approved by the Insurance Department. Approximately 200,000 employers in Pennsylvania must protect their employes by compensation insurance.

The approved rates which must be observed by the authorized Stock and Mutual Insurance Companies are based on each $100.00 of annual pay roll, and must be applied only for coverage of compensation liability. The State Insurance Fund is allowed a ten per cent reduction under the rates as approved for stock companies. The State Fund will charge $5.00 as a minimum for a single policy.

The manual containing the approved rates is the first to be issued in this State, and contains a number of rulings regulating the writing of compensation insurance. Stock companies must limit their cost of acquiring business to 17½ per cent. of their premium income.

Industrial plants, which install safeguards to protect their employes from injury, will be given schedule inspections by inspectors from the Department of Labor and Industry, and the Central Rating Bureau, to determine percentages of reduction from the approved rates, in recognition of the precautions that they have adopted within such plants.

The manual which has already been forwarded to the authorized insurance carriers, including the State Fund, designate the division of pay rolls and the methods which should be used in underwriting the different hazards of all risks.

Principal operation of a plant is the governing classification of its risk. Subdivision will not be permitted, unless separate and distinct enterprises are conducted by the same employer, without interchange of labor.

Exceptions are made for executive officers, clerical and office employes, salesmen, collectors and messengers, draftsmen, drivers and drivers' helpers, chauffeurs and chauffeurs' helpers, blasting, stamping operations, railroad hazard and extraordinary alterations and repairs.

The minimum premium that will be charged by stock and mutual companies is $10.00, except on contractors' risks for which it is $20.00. Blasting operations require an additional minimum of $25.00.

LADDERS MUST BE BUILT ACCORDING TO REGULATIONS.

Ladders, prolific causes of accidents in industries, must hereafter be built in accordance with regulations laid down by the Industrial Board of the State Department of Labor and Industry.

Regulations governing ladder construction have been formulated for ladder manufacturers and proprietors of industries using ladders.

Any ladders used in industries come within the rules of the Board after January 1, 1916. Ladders of municipal fire departments and the household step ladder are excluded. Every ladder used around industrial plants must be numbered or similarly designated and regularly inspected. Use of broken or weak ladders or ladders with missing rungs is prohibited, and defective ladders must be destroyed.

The complete Safety Standards for ladders are as follows:—

Vol. I

No. 14

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

LADDERS

OPERATIVE ON AND AFTER JANUARY 1, 1916

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

INDUSTRIAL LADDERS.

The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Caution:—Employees shall not remove or make ineffective any safeguards while the same are in use, except for the purpose of making repairs, and such safeguards so removed shall be replaced.

DEFINITIONS:

The term "Fixed Ladder" as used in these regulations shall mean a ladder that is substantially fastened to a structure in a fixed position.

The term "Portable Ladder" as used in these regulations shall mean a ladder with but one section, that is used transiently at various locations.

The term "Extension Ladder" as used in these regulations shall mean a ladder consisting of two or more parallel sections traveling in guides or brackets so arranged that it may be adjusted to variable lengths.

The term "Portable Step Ladder" as used in these regulations shall mean a ladder so constructed as to be self-supporting.

The term "Fire Ladder" as used in these regulations shall mean a ladder used exclusively for fire purposes.

The term "Trolley Ladder" as used in these regulations shall mean a ladder the movement of which is confined in permanent guides or ways at top or bottom, or both.

The term "Sectional Ladder" as used in these regulations shall mean a ladder consisting of two or more sections so constructed that the sections will pyramid into each other.

The term "A Ladder" as used in these regulations shall mean a ladder whose parts, each equivalent to a straight ladder, hinged at the top to form equal angles with the base.

The term "approved" as used in these regulations shall mean approved by the Industrial Board.

Section 1.—GENERAL:

(a) Where stairways are not provided, fixed ladders should be used for access to elevated positions; where fixed ladders are not suitable, portable ladders should be used.

(b) Ladders shall be numbered, or otherwise designated, and regular inspections shall be made of their condition.

(c) The use of broken or weak ladders, or ladders with missing rungs is prohibited.

(d) When defects develop to such an extent that the ladder is to be permanently discarded, it shall be destroyed.

(e) Side rails, where wood is used, shall be straight-grained. Knots one-half inch (½″) or less in diameter will be permitted when they are in the center of the rails. The following woods should be used: Northern spruce, Oregon pine, Norway pine or yellow pine.

(f) Rungs shall be inserted in holes in the side rails and kept from turning.

(g) Rungs, where wood is used, shall be straight-grained, and absolutely free from knots. The following woods should be used: White ash, oak (3rd growth), or hickory.

(h) Steps, where wood is used, should be constructed of the following woods: Northern spruce, Oregon pine, Norway pine or oak.

(i) Ladders constructed on and after January 1, 1916, shall have a uniform step and rung spacing of twelve inches (12″) on centers. (Mason ladders having a uniform spacing on centers of ten inches (10″) excepted.)

(j) Ladders having a variation of one-half inch (½″) or more in step or rung spacing shall be rebuilt to meet the requirements of Section 1, Paragraph (i). Ladders constructed prior to January 1, 1916, having a uniform step and rung spacing of not less than ten inches (10″) nor more than fifteen inches (15″) on centers may be used.

(k) Ladders shall be equipped with approved devices designed to prevent slipping. (Fixed ladders and portable step ladders excepted.)

Section 2.—FIXED LADDERS:

(a) Ladders having side rails are preferred to the type made of "U" shaped section embedded in wall or fastened to stack, etc.

(b) Pitch of ladders shall not be such that a man's position is necessarily below the ladder when climbing.

(c) Side rails, where metal is used, shall be not less than three-quarters of a square inch in cross-section. A size of two inches (2″) by three-eighth inch ($\frac{3}{8}$″) should be used. Where wood is used, they shall be not less than six (6) square inches in cross-section and shall be dressed on all sides.

(d) Splice plates, where metal is used, shall be the same size as material for side rails and shall be double riveted or bolted. Bolts or rivets shall be counter-sunk on inside and shall be not less than one-half inch ($\frac{1}{2}$″) nor more than five-eighth inch ($\frac{5}{8}$″) in diameter, where cross-section does not exceed that of two inches (2″) by three-eighth inch ($\frac{3}{8}$″). Where wood is used, there shall be splices on outside of side rails and joints shall be double riveted or bolted. Bolts or rivets shall be counter-sunk on inside. All splice pieces shall be chamfered at end.

(e) Rungs should be round. Where solid metal is used, they shall be not less than three-quarter inch ($\frac{3}{4}$″) in diameter; where pipe is used, they shall be of equivalent strength; where wood is used, they shall not be less than one and one-half inches ($1\frac{1}{2}$″) in diameter and the tenon shall be at least one inch in diameter or its equivalent in strength.

(f) Distances from front of rungs to nearest permanent object back of the ladder shall be not less than six and one-half inches ($6\frac{1}{2}$″). No obstructions shall be less than thirty inches (30″) in front of the rungs nearest the man climbing the ladder. There shall be a clear width of at least fifteen inches (15″) from center on either side across the front of the ladder. (Ladders equipped with wells (cages) or their equivalent shall be excepted.)

(g) Ladders over thirty feet (30′) in length should be provided with wells, unless the ladder is built in zig-zag sections and provided with platforms between sections.

(h) Fastenings shall be made of material equivalent in strength to the rails. Fastenings shall be made to wall by building in, by through bolts or expansion bolts grouted or leaded. The minimum vertical distance between fastenings or braces shall not be in excess of ten feet (10′).

(i) Ladders to landing shall extend a distance of at least forty-five inches (45″) above the landing, preferably being goose-necked. The rungs may be omitted above the roof. Where a man must step a greater distance than eighteen inches (18″) from ladder to roof, tank, etc., a platform shall be provided.

Section 3.—PORTABLE STRAIGHT LADDERS:

(a) Ladders over thirty feet (30′) in length should not be used.

(b) Side rails shall have a minimum cross-section equivalent in strength to a Northern spruce side rail of the following dimensions:

Up to and including 10′, $2\frac{3}{8}$″x$1\frac{3}{8}$″
Over 10′ up to and including 18′, $2\frac{3}{4}$″x$1\frac{3}{8}$″
Over 18′ up to and including 26′, 3″x$1\frac{5}{8}$″
Over 26′ up to and including 30′, $3\frac{1}{2}$″x$1\frac{7}{8}$″

(c) Side rails should spread so that the width of the ladder at the bottom will be greater than the width at the top, preferably by a taper of one-quarter inch ($\frac{1}{4}$″) per foot of length.

(d) Rungs shall be equivalent in strength and wear to an ash rung of the following dimensions:

	Diameter.	Tenon.
Up to and including 24″,.....	$1\frac{1}{4}$″	$\frac{7}{8}$″
Over 24″ up to and including 30″,.....	$1\frac{3}{8}$″	$\frac{7}{8}$″

Section 4.—EXTENSION LADDERS:

(a) The construction, use and maintenance of extension ladders shall conform to the specifications herein set forth covering portable straight ladders. (Section 3, Paragraphs (a) and (c) excepted.)

(b) Ladders shall be equipped with approved safety locks.

Section 5.—FIRE LADDERS:

(a) The construction, use and maintenance of industrial fire ladders shall conform to the specifications herein set forth covering portable straight ladders. (Section 3. Paragraph (a) excepted.)

(b) Ladders shall be plainly marked "For Fire Purposes Only."

(c) Ladders shall not be used for any other purpose than that for which they are intended.

Section 6.—PORTABLE STEP LADDERS:

(a) Ladders over twenty feet (20′) in length shall not be used.

(b) Side rails shall have a minimum cross-section equivalent in strength and wear to a Northern spruce side rail of the following dimensions:

Up to and including 12′, $\frac{7}{8}$″x3″
Over 12′ up to and including 16′, 1″x3$\frac{1}{2}$″
Over 16′ up to and including 20′, 1″x4″

(c) Front and back rails shall be so spread when the ladder is open that the width at the bottom, inside to inside, being greater than the width at the top, inside to inside, by an amount equal to or greater than one and one-half inches (1$\frac{1}{2}$″) per foot of length of ladder. Minimum width between side rails at the top step, inside to inside, shall be not less than twelve inches (12″), with a taper of at least one inch (1″) per foot of length of ladder.

(d) Steps shall be equivalent in strength and wear to a Northern spruce step of the following dimensions:

Up to and including 12′, $\frac{3}{4}$″x4$\frac{1}{4}$″
Over 12′ up to and including 16′, $\frac{7}{8}$″x4$\frac{1}{4}$″
Over 16′ up to and including 20′, 1″x4$\frac{1}{2}$″

(e) Steps shall be trussed and screwed or bolted to the side rails. Nails shall not be used as sole fastenings.

Section 7.—A LADDERS:

(a) Ladders over twenty feet (20′) in length should not be used.

(b) Side rails shall have a minimum cross-section equivalent in strength and wear to a Northern spruce side rail of the following dimensions:

Up to and including 12′, 1$\frac{1}{4}$″x2$\frac{3}{4}$″
Over 12′ up to and including 16′, 1$\frac{1}{2}$″x3″
Over 16′ up to and including 20′, 1$\frac{1}{2}$″x3$\frac{1}{2}$″

(c) Side rails should be so spread that the width of the ladder at the bottom, inside to inside, is greater than the width at the top, inside to inside, by an amount equal to or greater than one and one-half inches (1$\frac{1}{2}$″) per foot of length of ladder.

(d) Bearings shall be equivalent in strength and wear to an ash bearing one inch (1″) by two inches (2″). Bearings shall be straight-grained and absolutely free from knots; they shall be mortised through sides and have a tenon not less than five-eighth ($\frac{5}{8}$) of an inch by two inches (2″), secured to side with wire nail. The bearing shall be three inches (3″) from the top of the side rail. Bearings shall be eighteen inches (18″) on centers, and shall be staggered. Top of side rails shall be cut on bevel to stop same from spreading. Hinges shall be wrought or malleable iron, bolted or riveted to side rails.

Section 8.—**TROLLEY LADDERS:**

(a) Ladders shall be suspended from tracks fastened securely to the ceiling or to the framework with which the ladders are connected. Tracks should be wrought iron or wood. Tracks shall be constructed so that it is impossible for the wheels to jump the track, by having the wheels in pairs situated on opposite sides of a vertical flange or by having the track so shaped that it completely encloses the sides of the wheels. Each ladder shall have at least four wheels making contact with the track. The extreme front and back wheels shall have a horizontal distance of at least eight inches (8″) between their centers.

(b) The track wheels shall be rigidly fastened to the top of the ladder with suitable steel or wrought iron brackets. These brackets may be fastened to a bolt connecting the two side rails of the ladder or to the top step. In the latter case the top step shall be provided with extra metal braces to the side rails.

(c) Side rails shall have a minimum spread, inside to inside, of ten inches (10″).

(d) Side rails shall have a minimum cross-section equivalent in strength and wear to a Northern spruce side rail four inches (4″) by seven-eighth inch ($\frac{7}{8}$″).

(e) Steps shall be equivalent in strength and wear to a Northern spruce step four and three-quarter inches ($4\frac{3}{4}$″) by three-quarter inch ($\frac{3}{4}$″).

(f) Steps, where metal is used, shall be flanged downward not less than two inches (2″) at both ends and secured by two bolts or rivets to each side rail. Where wood is used, they shall be inset in the side rails one-quarter inch ($\frac{1}{4}$″), glued and nailed; all, or at least alternate steps shall be braced to the side rails with metal brackets placed under the step.

(g) The base of the ladder shall rest on two wheels or castors. They shall be placed on the outside of the side rails; where space is restricted, they shall be placed on the inner side of the side rail.

Section 9.—SECTIONAL LADDERS:

(a) Number 3 section (bottom) shall be six feet (6′) in length and shall have a minimum spread between rails at the base, inside to inside, of twenty-one inches (21″).

(b) Number 2 section (intermediates) shall be six feet (6′) in length and shall have a minimum spread between rails at the bottom, inside to inside, of thirteen inches (13″).

(c) Number 1 section (top) may converge with a minimum spread between rails at the bottom, inside to inside, of thirteen inches (13″).

(d) Side rails shall have a minimum cross-section equivalent in strength and wear to a Northern spruce side rail of the following dimensions:

Up to and including 5 sections, $2\frac{3}{4}''$x$1\frac{1}{8}''$
Over 5 sections, $3\frac{1}{8}''$x$1\frac{1}{8}''$

(e) Rungs shall be equivalent in strength and wear to an ash rung of one and three-sixteenth inches (1 3-16″) in diameter with seven-eighth inch ($\frac{7}{8}''$) tenon.

JOHN PRICE JACKSON, Chairman,
OTTO T. MALLERY,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,

Adopted November 5, 1915. Industrial Board.